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ABSTRACT

This document is the second annual report of the activities of the Program of Research and Evaluation for Public Schools (PREPS). The mission of PREPS, a consortium of public school districts in Mississippi, is to aid member schools in obtaining quality data from which curricular and administrative decisions can be made. Technical assistance rendered includes research design, evaluation design, statistical interpretation, and training workshops for local staff members. Section 1 of this book contains summaries of the local projects from each of the member school districts. Section 2 contains the technical report of the PREPS overall project, which investigated the relationship between teacher attitudes, characteristics, and delivery of instruction to standardized achievement test results. Section 3 reproduces a speech about local accountability. (Author/LD)

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PREPS

PROGRAM OF RESEARCH AND EVALUATION FOR PUBLIC SCHOOLS

ANNUAL REPORT 1977-1978

Bureau of Educational Research and Evaluation
College of Education
Mississippi State University

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SECOND ANNUAL REPORT

PROGRAM OF RESEARCH AND EVALUATION FOR PUBLIC SCHOOLS (PREPS)

1977-1978

Thomas H. Saterfiel
Program Leader, PREPS

October, 1978

PREFACE

After two years of operation, the PREPS consortium can be termed a resounding success.

A mere cursory comparison of the local projects of PREPS schools conducted in 1976-77 with those conducted in 1977-78 reveals a number of things which attest to the viability and strength of the consortium. For example, there appears to be an increased sophistication in methodology used in the research projects during the second year as compared with that used in the first year. Likewise, the interpretations of data and the conclusions that were drawn in the second year projects seem to be much more insightful than those of the first year. Finally, the comments of Dr. W. L. Bashaw, concerning the Second Annual PREPS Research Sharing Conference (see p. 157) and PREPS as a concept for tackling critical problems of public schools, serve as evidence that the PREPS consortium has already achieved a measure of success, and the likelihood of continued success is viewed as being highly probable. The success of PREPS is directly attributable to the diligence of local project personnel, to the sound advice of PREPS school superintendents, and to the expertise of the PREPS central staff.

Merrill M. Hawkins, Dean
College of Education
Mississippi State University

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INTRODUCTION

This document is the second annual report of the activities of the Program of Research and Evaluation for Public Schools (PREPS), a special program of the Bureau of Educational Research and Evaluation (BERE), College of Education, Mississippi State University. This report summarizes the period of PREPS operation from July 1, 1977 to July 30, 1978.

PURPOSE

The overall mission of PREPS is to diffuse educational technology among public schools. PREPS is a consortium of public school districts in Mississippi. These schools are working together with Mississippi State University through the College of Education and the Bureau of Educational Research and Evaluation to provide technical assistance to the member public schools to aid them in obtaining quality data from which sound curricular and administrative decisions can be made. The technical assistance rendered to the PREPS schools includes research design, evaluation design, statistical interpretation of data, computerized analysis of data, problem identification, training workshops for local staff members, and other areas as needs arise. Each member district is treated as a client and their individual needs are addressed within the structure of the program. By participating in this consortium, the member districts can acquire technical services at a lower cost than would be possible if each district acted alone. In addition, the consortium provides a vehicle for sharing ideas among the member districts.

The viability of PREPS as a strategy for diffusing educational technology among public schools apparently has merit since the concept was adopted in 1978 by Western Kentucky University and 21 public schools in its service area.

ORGANIZATION

PREPS is divided into three major functions: education, service, and research. The education function is associated with the workshops which are held during the year. These worskhops address various areas of interest as identified by staff members of the member schools. The major goal of these workshops is to help develop the expertise of local staff in the technical areas of research and evaluation. At various times the PREPS central staff also conducts workshops at the local district level when requested. The year-end workshop is a research sharing conference where all the member schools share their findings with the other schools, thus stimulating new ideas for research studies the following year.

The service function is directly related to the local school project. This project is usually a research study that is designed to collect and analyze data concerning a problem which has been identified by the local school district. However, sometimes these projects do tend to follow the lines of developing an evaluation model or designing a test instrument to evaluate curriculum at the local level. Essentially, the local project is designed to meet a local need and to utilize the technical expertise of the PREPS central staff.

The research function is encompassed in the overall project. Each year the chief administrators of the member schools agree on one major research study that addresses a problem common to all the schools. After the PREPS central staff designs the study, each school provides the necessary data for the project. Hence, the results have proven to be useful to all the member schools.

Guidelines for the governance of PREPS are derived through an Advisory Council that is composed of the superintendents from each member district. The PREPS Advisory Council also decides the nature and direction of the overall study that involves all member schools. Deliberations of the Council serve as input to other programs in the Mississippi State University College of Education.

FUNDING

PREPS is a cooperative arrangement between Mississippi State University and the member school districts. The University provides some funds to support the administration of the project in addition to providing office space and computer time at the rate charged to other University agencies. The member schools pay an initial contract fee of $1,200 per year. This amount entitles them to free admission to all workshops for an unlimited number of local project staff members, the analysis and interpretation of one local project, two free on-site visits, unlimited technical advice, and copies of the annual report. Should additional on-site visits be necessary, then a fee schedule has been developed by which these services can be purchased at a reduced rate. A separate fee schedule has been developed for non-member school districts. Funds thus derived go to salaries, travel, computer time, and other expenses that are essential to operation of the program.

MEMBERSHIP

There were seventeen public school districts that were members of PREPS for the 1976-1977 school year. They were:

Forest Public Schools

Greenville Public Schools

Greenwood Public Schools

Jackson Public Schools

Laurel Public Schools

Leflore County Public Schools

Louisville Public Schools

McComb Public Schools

Meridian Public Schools

Moss Point Public Schools

Natchez Public Schools

Newton Public Schools

Pascagoula Public Schools

Starkville Public Schools

Tupelo Public Schools

Vicksburg Public Schools

West Point Public Schools

STAFFING

Listed below are the staff members who have contributed a portion of their time to the central PREPS office at Mississippi State University. Since no one person has PREPS as their sole responsibility, the titles of these individuals may reflect some of their other duties.

James E. Wall, Ph.D., Associate Dean (Research and Development)
and Director, Bureau of Education Research and Evaluation

Thomas H. Saterfiel, Ph.D., Program Leader for PREPS

David T. Morse, Ph.D., Senior Research Psychologist, Bureau of Educational Research and Evaluation

Herbert M. Handley, Ed.D., Senior Researcher, Bureau of Educational Research and Evaluation

Charles J. Monlezun, Ph.D., Assistant Professor of Statistics and Program Statistician for PREPS

Louis Mazzotta, M. A., Graduate Research Assistant

Martha Carroll, Secretary-Editor

Listed below are the superintendents of the member schools who served on PREPS Advisory Council.

Mr. Richard Hill, Forest Public Schools

Dr. James McCullough, Greenville Public Schools

Dr. Robert Cagle, Greenwood Public Schools

Dr. Robert N. Fortenberry, Jackson Public Schools

Mr. David Shephard, Laurel Public Schools

Mr. Otis W. Allen, Leflore County Public Schools

Mr. Thomas W. Saterfiel, Louisville Public Schools

Dr. Ted J. Alexander, McComb Public Schools

Dr. Kenneth Loflin, Meridian Public Schools

Dr. Hines Cronin, Moss Point Public Schools

Mr. Claude Porter, Natchez Public Schools

Dr. Mel Buckley, Newton Public Schools

Dr. Thomas L. Richey, Pascagoula Public Schools

Dr. Nolan Vickers, Starkville Public Schools

Mr. Julian D. Prince, Tupelo Public Schools

Dr. Robert Cochran, Vicksburg Public Schools

Mr. R. D. Griffin, West Point Public Schools

Listed below are the local coordinators who were responsible for directing the PREPS program in the member school districts.

Mr. Jerry Sharp, Forest Public Schools

Mr. D. I. Young, Greenville Public Schools

Mr. W. D. Wilson, Greenwood Public Schools

Dr. Curtis G. Summerlin, Jackson Public Schools

Mr. Joe Watson, Laurel Public Schools

Mr. Archie Simmons, Leflore County Public Schools

Mr. J. T. Smith, Louisville Public Schools

Mr. Warren Fesmire, McComb Public Schools

Dr. James Hefter, Meridian Public Schools

Dr. Ray Holifield, Moss Point Public Schools

Mr. Donald O. Marion, Natchez Public Schools

Mr. Frank Kirby, Newton Public Schools

Mr. Michael Spradlin, Pascagoula Public Schools

Dr. Mary Shelton, Starkville Public Schools

Ms. Peggy Carnathan, Tupelo Public Schools

Mr. Charles Craft, Vicksburg Public Schools

Mr. Horace Lane, West Point Public Schools

SPECIAL ACTIVITY

The PREPS central staff was asked to serve for a second year in providing technical assistance to the Mississippi State Department of Education in implementing the Accountability Law. With the consent and encouragement of the PREPS Advisory Council, assistance was rendered in the form of technical advice, developing models through which the State Department of Education could carry out its goals, and analyzing data collected through the state-wide student assessment program. Accountability is not easy to deal with, but is rather a hard and difficult issue which Mississippi educators are determined to address.

The Advisory Council of PREPS allowed the consortium to serve in this function since it felt that by providing this type of technical expertise a positive contribution could be made to accountability in Mississippi.

The activities this year included developing and presenting five regional workshops on the Discrepancy Evaluation Model (DEM). A special sixth workshop was presented to PREPS school staff members at the Universities Center in Jackson on October 26-28, 1977. Dr. Robert Covert, Evaluation Research Center, University of Virginia, was guest speaker and provided assistance in utilizing the DEM.

In addition, the PREPS staff served as technical consultants in the development of an Educational Television Program on accountability entitled, "Easy as 1.2.3". The PREPS staff also conducted research on the state test scores and prepared several documents which were disseminated by the State Department of Education.

PREPS has also had the opportunity to share its concept of research and evaluation service with other parts of the nation. This past year the PREPS concept was discussed at the Annual Forum of the Association for Institutional Research in Houston, Texas and at the Mid-South Educational Research Association in Birmingham, Alabama. In Birgmingham, several local coordinators and superintendents from PREPS member school districts were given the opportunity to share the results of their local projects and their views of PREPS. As an outgrowth of that meeting, Western Kentucky University established a PREPS consortium, with assistance from the Mississippi State University PREPS central staff, to aid schools in Kentucky in terms of research and evaluation services.

Although PREPS has been afforded many opportunities to particpate in additional types of research and evaluation activities, its prime concern is in aiding the local member school districts to obtain good data to aid in the decision making process.

PLANS FOR THE FUTURE

PREPS plans to have an orderly growth in the future. As opportunities for service are identified and as local school districts realize the benefits to be derived from this consortium, new members will be added to the program. As the growth in membership occurs, a complimentary growth in the staff of the Bureau of Educational Research and Evaluation will also occur. Staff development in the Bureau will be designed to bring individuals to the University who possess unique talents that are necessary for local schools to acquire the data necessary for decision-making. One new staff member was added this year, David T. Morse. His expertise in test development as well as his training in evaluation has expanded PREPS ability to serve the member schools.

As growth occurs, the consortium will continue to concentrate on delivering quality service to each member school district. The long-range future of PREPS is largely dependent on its members. PREPS is not in the business of doing things to school districts, but rather in assisting school districts to do things that are consistent with their objectives and goals. Through cooperative effort, PREPS will change and develop in order to provide quality service for decision-makers in education as it is guided by the PREPS Advisory Council.

The remainder of this Annual Report is organized as follows. Section I contains three- to five-page summaries of the local projects from each of the member school districts. It should be remembered that the research studies contained in these summaries were designed to address questions of local interest and not necessarily to be generalizable to other situations. In addition, it can be seen that detailed research procedures and tables of statistical analyses do not always appear. The project summaries are designed to inform the reader of the general purpose of the study and to give the reader some general findings of each study. Should additional information be desired on a single study, the reader should contact the local school district since PREPS is not at liberty to release confidential data from individual member school districts.

Section II contains the technical report of the PREPS overall project which investigated the relationship of teacher attitudes, characteristics, and delivery of instruction to standardized achievement test results. For the reader who is interested only in the findings, the "Conclusions and Recommendations" section of this report provides this information.

Finally, Section III contains an edited version of the speech delivered by Dr. Louis Bashaw at the 1978 PREPS Research Sharing Conference that was held at the Holiday Inn-Medical Center, Jackson, on August 10, 1978. Dr. Bashaw is a recognized leader in the area of third-party evaluation and is acting head of the Department of

Educational Psychology at the University of Georgia. He has many years of experience in working with public schools as a third-party evaluator for federal projects. This experience allows him to give guidance to public schools as they consider the many benefits and problems associated with evaluations of federal projects.

SECTION I:

SUMMARIES OF LOCAL PREPS PROJECTS

FOREST PUBLIC SCHOOLS

The Problem

Forest Public Schools conducted a research project using educational television (ETV) as a teaching tool at the high school level. During the 1977-78 school year, over 100 ninth-grade students were included in the study. Three subject areas were used: use of the metric system; vocabulary; and government and civics. The three ETV programs used were: "Metrics"; "Wordsmith" (vocabulary strengthening); and "With Liberty and Justice for All" (government). Students taking part in the study were pre-tested prior to viewing any series, and were post-tested at the conclusion of the series. In addition, an instrument intended to assess student attitude towards educational television was administered before and after the study. In this manner, the aim of the project was to determine the efficacy of ETV as a tool for facilitating learning.

The ETV Programs

Metrics. The Metrics set is made up of fifteen individual lessons, each about fifteen minutes in length. The lessons were presented at the rate of two per week to students in math classes. Including time for review, the lessons covered two six-weeks terms (twelve weeks total) during the year.

Wordsmith. The Wordsmith set is made up of approximately thirty individual lessons. The lessons were presented at the rate of one to two per week to students in English classes. Including time for review and some repetition, the lessons were presented over the entire school year.

Liberty. The set, With Liberty and Justice for All, is made up of sixteen lessons. The lessons were presented at the rate of one to two per week. Including time for review, the lessons were presented over one semester.

The Questions

This study was intended to provide answers to several specific questions, namely:

1. Does viewing of the ETV series result in increased acquisition of the content covered in the series?

2. Do students who are exposed to a particular ETV series learn more of the lessons' content than do students who do not view the lessons?

3. How do students' attitudes towards ETV change as a result of viewing one or more ETV series?

Conclusions and Recommendations

From the analyses of the data generated from this study, the following conclusions appear to be warranted:

1. For each of the three ETV series included, students demonstrated a significantly greater knowledge of the content as measured by the tests after viewing the series.

2. After participating in one or more of these ETV series, students demonstrated possession of a significantly more positive attitude towards ETV, as measured by the attitude instrument used.

3. When compared to students not viewing the Wordsmith series, students viewing the series demonstrated significantly greater knowledge of the content, as measured by the test. The exact magnitude of this difference cannot be determined due to an apparent lack of motivation in taking the posttest on the part of some members of the comparison group.

4. When compared to students not viewing the Wordsmith series, students viewing the series did not demonstrate possession of a significantly different attitude towards ETV, as measured by the attitude instrument used.

5. The number of these particular ETV programs which a student viewed (one, two, or three) was not significantly correlated with students' post-participation attitude towards ETV, as measured by the attitude instrument used.

If studies of a similar nature are to be conducted in the future, the following recommendations should be followed.

1. Any test or attitude instrument should be carefully constructed or selected, and field-tested on similar students. Also, evidence as to the reliability and validity of such instruments should be collected.

2. For any comparison group(s) used, an extra effort should be made to maintain the students' motivation at a reasonable level when taking pretests or posttests.

GREENVILLE PUBLIC SCHOOLS

Educators are constantly searching for ways to do a better job of motivating children who have traditionally been classified as slow learners. One suggestion has been to involve the parents of these children in activities which encourage them to help their children in their learning experience at home. In an attempt to investigate the experimental hypothesis that involving parents of slow learners in special experiences at school will lead to better achievement, the Greenville Public Schools designed the following study.

Students who could be classified as socio-economically disadvantaged and slow learners were identified in the first three grades in two schools. One school was the treatment group and one school was the control group. Both of these groups did receive Title I assistance.

The purpose of the program in the treatment group was to include parents in a series of experiences at school which would help them to better understand and assist their children in their school work. A detailed program was designed to provide this training to parents.

Parents of the treatment group were visited by trained interviewers who collected information from them during the fall. In the spring, both the treatment and Title I control group parents were interviewed again using the same instrument. In addition, the teachers of all the students also filled out an attitude survey on each child in the fall and again in the spring.

Student achievement data were collected on both groups. Each student was given a pretest in Reading and Mathematics in the fall and a posttest in Reading and Mathematics in the spring. In addition, the students in both groups were given a school attitude inventory in the fall and again in the spring.

Before any analysis is discussed, it should be mentioned that this study had potential problems. The sample size was small and the students were not matched to assure that they were equal in terms of achievement, when the study began. In addition, no effort was made to match teachers to assure that the delivery system of instruction was equivalent.

The key to the success of this study was the voluntary participation of parents in the structured experiences. Although the staff made an excellent effort to invite and involve the parents in the experiences, the success was less than what they expected. A major unexpected finding of this study was that parents of low socio-economic students are not easily involved in school experiences even when they are well planned and publicized.

Questions to be Answered

1. Were there any significant differences in achievement scores by group by grade level?

2. Were there any significant differences in teacher attitudes by group by grade level?

3. Were there any significant differences in parents' responses on the home survey by group by grade level?

4. Were there any significant differences in students' attitudes by group by grade level?

5. What factors were significantly related to the achievement scores by grade level?

Conclusions

It is obvious that the data in the study were unable to support the hypothesis that a strong parent intervention program for parents of low socio-economic, poorly achieving children can lead to a significant increase in achievement. The major finding of the study was that even when money was available, the staff was dedicated, and the experiences were well organized and presented, it was extremely difficult to motivate parents to participate in a special program designed to help them help their children.

Many pages could be devoted to a discussion of why the parents did not participate. However, it should suffice to say that anyone seeking to duplicate this study must give an enormous amount of effort to involving the parents.

Although the parent intervention program could not be shown to be effective, at no fault of the Title I staff, several interesting facts were identified.

A. Evidence was found that teachers' attitudes and parents' attitudes concerning the child's level of success and potential for future success are significant factors in explaining achievement test scores in both reading and mathematics.

B. Children of parents who have visited the school or met with the teachers also appeared to have higher achievement test scores than those who did not. However, no one can say what the parents' participation in the school activities represents. In addition, no one knows if these parents would have been involved with the school even if no special effort had been made on the school's part to involve them over and above the traditional activities.

C. Evidence was gathered which tended to suggest that some wide variations may exist in the reading and mathematics instructional programs at the schools represented by the treatment group and the Title I control group. The treatment group school appeared to have a strong mathematics program while the Title I control group appeared to have a stronger reading program.

D. The parent intervention program appeared to do an excellent job in improving the attitude of the treatment group parents toward the school during the year. However, it should be noted that the final attitude scores of the treatment group parents were not significantly different from the Title I control group parents.

E. Evidence was gathered which indicated that students involved in this study were not afraid to ask their teachers questions and felt their teachers gave them the help they needed. However, the students also felt that they needed to "follow the crowd" at school instead of doing what they wanted to do. In addition, the students appeared to not view their classmates as friendly, thus setting the stage for potential problems in their learning environment.

Care should be taken in interpreting the results. It should be remembered that only a few children were involved in the study and these children were selected because of their low socio-economic status and their poor achievement. Therefore, students who do not fit this pattern probably exhibit different traits. In addition, no data in this report should be considered sufficient grounds for making a decision on any of the issues raised in this paper, but rather a justification to warrant further investigation.

GREENWOOD PUBLIC SCHOOLS

Introduction

The Greenwood Public Schools conducted an evaluation of their Title I program in grades 1-10 using scores from administrations of the California Achievement Test, 1970 edition (CAT-70). For grades 1, 2, 3, 9, and 10, the only data collected were the pre- and posttest scores for reading and mathematics. In grades 4-8, the same data were collected. However, in these five grades, Title I eligible students participated in one of two groups: (a) traditional Title I class, or (b) a special, computer-assisted instructional CAI program. Grades 4 and 8, in addition to the two groups mentioned earlier, had Title I eligible students who received no services.

Students using the CAI program actually did not receive a full year's treatment. Mechanical problems with the computer severely limited the amount of time students had to work with the CAI system. This analysis will examine the results from the CAT-70 by grade. It was assumed that the CAI program would be more effective in terms of achievement than the regular Title I instructional program.

Data Analysis

The data in this study were collected in terms of national percentiles and were converted to normal curve equivalent (NCE) scores. These scores allowed model A, the norm-referenced model, to be used in the analysis of data from Title I students. This model allows one to observe if students are improving their relative position over the period of time between the pre- and posttest. In addition to the calculations called for in model A by Title I, a dependent t-test was conducted to determine if the NCE gains were statistically significant.

In grades 4-8, a different analysis was utilized. For grades 5, 6, and 7, where only two groups of students were involved, an independent t-test was used. In grades 4 and 8 where three grades were used, analysis of variance was used. For these grades, the data were collected in scale scores which are internal measures.

Conclusions

The data gathered on the students in Greenwood led to the following observations:

A. It is obvious, as far as Title I students are concerned, that larger gains were attained in the reading program as opposed to the mathematics program. Only in the second and fourth grades were NCE gains in mathematics scores large enough to be convincing evidence that the program was effective.

B. The results of the computer program were inconsistent. For fourth and eighth grade students, larger gains were noted for CAI students as opposed to regular Title I students in reading and for eighth grade students only in reading. However, in no case was the increase significantly different from that of the regular Title I students. In addition, the fifth grade Title I CAI group's change scores were shockingly negative. To say the least, the data do not indicate that the CAI program for Title I is a uniformly superior program for the Title I students. In fairness, one should remember that mechanical problems with the computer system may have limited its opportunity for a successful demonstration.

C. The data revealed that the Title I program was more effective for students at the lower elementary level. This finding is consistent with other findings which suggest that remediation is most effective with younger children.

D. The data strongly suggest, at least for fourth and eighth grade students, that the students in the Title I program had mean gain scores far superior to Title I eligible students who received no assistance. This pattern was true for both reading and mathematics. This evidence would suggest that the Title I program is effective in terms of student achievement.

The future research in Greenwood has many possibilities. One major consideration may be a study of the computer system for a second year so that mechanical problems can not be cited as a reasons for poor performance. A second possible study could assess the effectiveness of some type of change in the mathematics program for Title I students since change is probably pending. Finally, it should be pointed out that acquiring longitudinal data over time on Title I students would provide an excellent tool for decision making concerning the special programs.

A last consideration would be using some diagnostic (and possibly prescriptive) instruments to gather data on students' performance. The overall scores for math and reading are nice, but until achievement can be tied to more measurable, well-defined objectives, it will still be difficult to evaluate the program. For instance, we know from this study that the Title I math program is weak, but no data are available in detail as to what skills students have mastered and in what areas the students need extra attention. Without this type of data, only general conclusions can be reached.

JACKSON PUBLIC SCHOOLS

Right to Read Project, 1977-78

The Reading Readiness Project with parental involvement, funded by Right to Read, and implemented in four elementary schools, focused on the following three general objectives:

1. Improved student achievement by developing the educational readiness of preschoolers identified as "high risk";

2. Regular and organized parent education for improving parental understanding of child-rearing techniques, principles of child development, and knowledge of skill at conducting preschool readiness activities with their children; and

3. Systematic staff development designed to help teachers and staff involved with the program to improve their understanding of how to involve parents in the classroom, as well as to improve their skill and self-confidence as an educator of parents as well as children.

Children who participated in the project at each of the four schools attended half-day sessions from 8:00-12:00 a.m. The instructional activities emphasized readiness experiences in the areas of reading, math, language arts, social studies, science, music, art, health and safety, and physical education. Emphasis was also placed on oral language development and the mastery of specific sequenced prereading skills. In short, the project was aimed at developing the physical, socioemotional, mental, and educational readiness of the preschool child. The following eleven specific skills were identified:

1. Visual perception
2. Auditory perception
3. Spatial relationships
4. Cognitive skills
5. Sixty basic vocabulary words
6. Ability to read simple sentences
7. Ability to construct and copy simple sentences
8. Readiness in math
9. Increased achievement motivation
10. Improved self-image
11. Improved social skills

Parents participated in training sessions, volunteered their services in classroom activities, and cooperated during home visitations. Parent training sessions held twice a month throughout the school year, were designed to: introduce parents to the preschool program and other parents participating in the project; familiarize parents with the concept of reading readiness and methods of conducting readiness activities in the

home; familiarize parents with games, educational toys, and the skills these items emphasize; familiarize parents with the classroom activities in which their children would be participating; provide parents with guidelines for selecting toys, games, and books for their children; and to give parents an opportunity to become actively involved in school functions.

Table 1 demonstrates that each school achieved the stated objective regarding student achievement as measured by the Metropolitan Readiness Test. Each school's mean stanine score rose from the first, second, or third stanine to the fourth, fifth, or sixth stanine. This achievement held true for both subtest scores as well as for the composite score.

Tables 2 and 3 present another dimension of preschool educational readiness -- the self-concept. The Primary Self-Concept Inventory Scale (PSCI) was used on a pretest/posttest basis to measure a child's personal self, social self, and intellecutual self. Table 3 suggests that on the average, project participants at each school developed improved self-concepts through their participation.

In summary the project objectives were completely attained. A more detailed analysis of the findings can be obtained by writing the Jackson Public Schools, Office of Management Services.

Table 1

Metropolitan Readiness Test
Form P Level I
1977-78 Preschool
National Norm Stanine Scores
Matched Cases

School	N	Visual		Language		Composite	
		Pre	Post	Pre	Post	Pre	Post
Baker	23	2	4	2	6	1	5
Dawson	24	3	4	2	4	2	4
Powell	22	2	5	2	4	2	5
Spann	16	3	5	2	5	2	5

Table 2

Primary Self-Concept Inventory

Personal Self Domain	
Factor I	Physical Size
Factor II	Emotional State
Social Self Domain	
Factor III	Peer Acceptance
Factor IV	Helpfulness
Intellectual Self Domain	
Factor V	Success
Factor VI	Student-Self

Table 3

Primary Self-Concept Inventory
1977-78 Preschool

School	N	Personal Self		Social Self		Intellectual self		Composite	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Baker	24	3.67	5.54	2.88	5.58	4.79	5.88	11.34	17.00
Dawson	25	3.62	4.46	2.25	2.67	4.96	5.87	10.83	13.00
Powell	24	4.29	5.33	3.47	5.20	5.28	5.91	13.04	16.44
Spann	14	4.43	4.29	2.43	1.86	4.43	5.29	11.29	11.44
$\bar{X}$		4.00	4.91	2.76	3.83	4.87	5.74	11.63	14.47

Total Possible Domain Score: 6.
Total Possible Composite Score: 18.

LAUREL PUBLIC SCHOOLS

Introduction

The Laurel Public Schools tested their children in the state assessment program using the California Achievement Test, 1970 Edition (CAT-70). The reading program is of major concern to the school officials. Therefore, scores were obtained for vocabulary, comprehension, and total reading. Since data existed from the 1976-77 school year on current fifth and sixth grade students, these students were selected for analysis. The 1976-77 test scores were treated as pretest scores and the 1977-78 test scores were treated as posttest scores. All scores were recorded in scale score points so interpretation could be made across grades.

Data were gathered on each student in the fourth and fifth grades. The data included the student's school, the instructional grouping to which the student was assigned, a notation if the student received Title I services, and a notation if the student moved between the two test administrations.

Questions

The study was designed to address the following questions concerning the data:

1. Is there any significant difference in the reading achievement of students in the instructional program?

2. Is there any significant difference in the reading achievement of students who received Title I services?

3. Is there any significant relationship between teacher tenure in a school and the student's achievement?

4. Is there any significant difference in achievement when comparisons are made by sex or race?

5. Is there a significant pattern of achievement between the posttest reading scores and the aptitude scores from the S.F.T.A.A.?

6. Is there a noticeable pattern of mobility among students in the various schools?

Method of Analysis

In an attempt to give some meaning to the data, the non-standard analysis of covariance was primarily used.

Simply, it allows each group to develop its own learning pattern based on pretest - posttest score analysis. One can then determine if the learning patterns are the same. In addition, one can compare two groups at the mean for the lower group to see if, at an equivalent point in terms of pretest scores, the groups are different.

The analysis provides all the data called for in Model C of the Title I Evaluation Program and more.

Conclusions

There are several conclusions which can be drawn from these data. However, a warning should be issued that, due to student mobility, there were missing data. Therefore, these data represent only one look at the situation. Other measures must be taken on most issues before definite conclusions can be reached.

A. The fifth grade students are reading at essentially the same level as the sixth grade students. In addition, the two groups of students have essentially the same mean SFTAA measured in raw scale points (RSS). No causality can be inferred from these data, but this fact should be noted for future reference. If this pattern of improvement can continue over-time, one may be able to talk about the effect of implementing the new reading program in the Laurel Public Schools within a few years.

B. For some reason not readily apparent to the evaluators, the students of teachers who were new in that particular school for the first time had superior performances. The pattern was most evident at the fifth grade level. An examination of this phenomenon would seem to be worthy of investigation.

C. In terms of race and sex, no significant difference could be identified for sex on any achievement test score, while there was a most evident difference by race for all but an achievement test area for fifth grade students. The area was reading difference which tends to indicate that children of both races are functioning essentially the same when aptitude is considered. However, this finding was not true for sixth grade students. The black children appear to have room for improvement in reading in the sixth grade.

D. Looking at the Title I serviced group and the high and low instructional groups, one tends to feel that, with the exception of the sixth grade vocabulary scores for the low instructional groups and the Title I serviced group, these programs are essentially successful. This success is being determined by their comparison groups in their own school.

E. The final and most obvious finding is that the Laurel Public Schools has a student mobility problem. Students are leaving and entering the system at the rate of 40% a year, thus, it becomes extremely difficult to sequence curriculum between grades. In addition, it raises the need for diagnostic instruments to evaluate the needs of these new children each year. One may also wish to determine the reasons behind this exodus to see if any of them are school related.

LEFLORE COUNTY PUBLIC SCHOOLS

The Problem

Leflore County Schools conducted a research project aimed at investigating the effectiveness of Title I programs in reading and mathematics. During the 1977-78 school year, performance data were collected for more than 1600 students in grades four through eight. The general areas of concern to the investigators were: (a) determining the efficiency of the Title I programs in grades four through eight; (b) determining whether the analysis procedure used for Title I assessment (model A, the norm-referenced model; and model C, the special regression model) makes any difference in the results; and (c) determining what changes occurred in the test performance of non-Title I students.

The Questions

This study was designed to provide answers to specific questions, namely:

1. How do total CAT-70 subtest NCE's compare between schools?

2. What changes in NCE scores for total CAT-70 subtests occurred for Title I and non-Title I students in each grade?

3. Were there any differences in pretest to posttest change between Title I and non-Title I students in each grade?

4. Were the Title I programs effective, and how did estimated effectiveness vary as a result of using model A vs. model C?

Methodology

This study included nearly all students in the Leflore County School system in grades four through eight. The particular research designs, variables, and statistical analyses are discussed in this section.

Research Designs

In order to answer the second question, concerning changes in total CAT-70 subtest scores, a single-group, pretest-posttest design was used separately for Title I and non-Title I students. Test scores from the spring of 1976-77 were used as the pretest measures, while test scores from the spring of the 1977-78 school year were used as posttest measures. In Campbell and Stanley (1966) notation, the design was:

$$O_1 \quad X \quad O_2$$

Where: O_1 = pretest

X = treatment (school)

O_2 = posttest

Because this design is weak in terms of its ability to control for extraneous factors which might affect the results, questions three and four examined different comparisons.

Question three, dealing with differences in pretest to posttest change between Title I and non-Title I students, required a two-group design. In Campbell and Stanley notation, the design was:

$$\frac{O}{O}1 - \frac{X}{X}1 - \frac{O}{O}2$$

Where: O_1 = pretest

O_2 = posttest

X_1 = Title I treatment

X_2 = No Title I treatment

dashes = intact (non-random) groups

This design is a non-equivalent control group design. The groups in this design were actually the students receiving and not receiving Title I services. The groups were intact (existing before the study began), and were not made of students assigned to groups at random. This design offers more control over extraneous variables than does the first design, but is not a full experimental design.

Question four was addressed by use of models A and C recommended for ESEA Title I analyses (Tallmadge and Wood, 1976). In each model the change in performance from pretest to posttest is compared to certain benchmark changes. Model A requires comparison to national norms on pretest and posttest occasions; any change in relative position on the national norms is taken as the measure of effectiveness. Model C obtains the benchmark change by observing how non-participating students performed from the pretest to the posttest. The title I program is deemed effective if the participating students demonstrate an increase in performance beyond the estimate of that which equivalent non-participating students would have shown, had there in fact been any such students. In both models A and C, therefore, Title I students' performance is being compared with some arbitrary standard -- relative position on national norms, or the hypothetical gain of equivalent students.

Variables

Information collected on each student included: (a) school; (b) grade; (c) Title I status, (d) selected CAT-70 subtest scores, including reading vocabulary, reading comprehension, total reading, mathematics computation, mathematics concepts and problem solving, total mathematics, and language arts from Spring, 1977 (pretest) to Spring, 1978 (posttest) in both percentile ranks and in scale scores or raw scores; and (e) Spring, 1978 Short Form Test of Academic Aptitude (SFTAA) aptitude in reference scale score (RSS) units. All percentile ranks were recorded as normal curve equivalent (NCE) scores.

Statistical Analyses

For question one, mean scores and standard deviations for NCE scores were calculated for the subtest areas of total reading, total mathematics, and language arts by school and by grade. Question two was analyzed by using dependent t-tests, comparing the change of Title I participating students' scores from the pretest to the posttest. The procedure was repeated for non-participating students. In both sets of comparisons, total reading, mathematics, and language arts scores expressed in NCE's were used. Question three compared the amount of gain of students served and not served by Title I programs by independent t-tests using NCE's. Question four compared the summaries of effectiveness obtained by model A and model C, using NCE scores. In addition, a sample comparison was made at the fifth grade with scale scores.

Conclusions

The following conclusions appear to be warranted from the analyses of the data:

1. There are between school differences in both mean achievement levels as well as in year-to-year gain on the CAT-70. These differences, however, should not be attributed to differences in the quality of instruction without additional information. One valid comparison, however, is that of noting how many students improved their scores at each grade level on each subtest (assuming equal facilities and materials at all schools).

2. District-wide, there were improvements in performance relative to the national norms in all subtest areas for all grades except the fourth grade. The changes at the fourth grade level indicated that only about one-third of the students were improving in relative position; whereas in the sixth grade, about one-half of the district's students were improving.

3. Performance on the mathematics subtest appeared to be most amenable to improvement, if the number of grades in which more than one-half of the students gained with respect to the national norms was considered as the criterion.

4. When the 1977-78 posttest performance of any grade was compared to the 1976-77 performance of the same grade level, this year's scores were uniformly superior. Thus, at least for a short term, scores in Leflore County are improving by grade.

5. Comparisons of gains for Title I students indicate that the students' position generally improved on the CAT-70 national norms. Improvement on the mathematics subtests were uniformly positive, while, for language arts NCE score gains, positive changes were noted for grades five and six.

6. The changes in NCE score of non-Title I students were mixed in all subtests areas. For grades five and six, the gains were uniformly positive. In the fourth grade, though, the changes were negative in each subtest area. For the seventh grade, only the gain in language arts was positive. In the eighth grade, there were improvements on both the reading and mathematics subtests.

7. Examining only scale scores (not NCE's) in the fifth grade, both Title I and non-Title I students registered statistically significant mean ADSS gains in each of the subtest areas.

8. The mean NCE gains of Title I students were generally greater than were those of the non-Title I students. In grades four and five, this result held for all subtests. In grades six and eight, the Title I gains were superior in reading and mathematics. In the seventh grade, the mean NCE gains were greater for Title I students only on the mathematics subtest.

9. Both Model A and Model C results favored the Title I program more often than not. Model A, however, yielded a larger number of favorable comparisons, and the differences were of larger magnitude (see Table 1). The two models compare observed Title I performance with different expectations.

10. Use of scale scores for the Model C comparisons at one grade level resulted in a slightly different pattern of results (see Table 2). This is due to the non-linear relationship of raw scores to percentile while raw scores are nearly linearly related to ADSS units. What this means is that sometimes use of NCE scores will result in more favorable Model C comparisons, and sometimes use of ADSS scores will make the Title I program appear more effective. The factors involved are the initial pretest status, compared to national norms, and the amount of gain.

Table 1

Summary of Model A and Model C
Title I Comparisons for NCE
Gain on CAT-70 Subtests by Grade[1]

Grade	Subtest	Model A	Model C
4	Reading	2.28	1.28
	LA	-0.77	-3.57
	Math	1.01	0.83
5	Reading	1.44	-0.17
	LA	5.08*	-0.55
	Math	9.17*	5.03*
6	Reading	4.77*	-0.29
	LA	6.21*	-1.96
	Math	5.90*	2.64*
7	Reading	-0.48	-0.41
	LA	-0.31	-3.32*
	Math	3.85*	2.79
8	Reading	3.76*	2.57*
	LA	-1.27	-0.46
	Math	5.21*	3.18*

[1]Numbers listed for each model are differences in observed performance level and "no treatment expectation" level as defined for each model.

*Significant at $\alpha = .01$.

Table 2

Model C Comparisons for
5th Grade Title I Students
Using Scale Scores

Subtest	Effectiveness in ADSS Units[1,2]
Reading	4.70
LA	-9.42
Math	9.02

[1] Effectiveness in difference between observed group mean performance level and "no treatment expectation" level; a positive number indicates, observed score was better than no treatment score.

[2] None of the values were statistically significant at $\alpha = .01$.

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LOUISVILLE PUBLIC SCHOOLS

The PREPS project in the Louisville Municipal Separate School District during the 1977-78 school year was centered around the completion of a follow-up study of 1976 graduates (begun in 1977) and the initiation of a new study of the 1977 graduates.

The purpose of this research was to determine how well graduates of the Louisville Municipal Separate School District are prepared for entry into higher education or into the world of work. A secondary purpose was to determine the relationship of selected personal and academically-related variables for successful entry of graduates into these two areas of endeavor.

The first phase of the study included 229 students who graduated as seniors in 1977 from the District's three high schools. These students were grouped into three tracks on the basis of courses of study which they had pursued in high school. The curriculum tracks utilized were: (1) College Preparatory, (2) Vocational Education, and (3) General Education.

The second phase of the study was based on follow-up questionnaires received from 162 members of three graduating classes in the Louisville District.

The following points summarize the results of the evaluation study.

Phase I: Study of the 1977 Graduates

1. High school graduates of the Louisville Municipal Separate School District in 1977 were well prepared for college entry and for the world of work. Nearly 90% of the students taking the ACT test could be admitted to college in Mississippi; more than 68% of the students could go to any college they chose in the state. Over 66% of the students studying in vocational and general programs combined had secured and kept a job within three months after graduation. All graduates of the vocational program reported that they either had a job or were pursuing further study at the time of the data collection.

2. Eleventh grade standardized test scores in mathematics and reading, IQ score, overall high school average, and the number of units earned in high school science were among the best predictors of ACT scores for graduates. Students who achieved higher in science as early as the sixth grade were found to score higher on the ACT. None of the other sixth grade achievement scores were significant as predictors. A negative relationship was found between ACT scores and the number of units earned in vocational education. These data mean that some of the students with less academic potential are screened into vocational programs

and, therefore, complete more work in this area. Black students also tended to score lower on the ACT test.

3. Students who pursued a program of vocational education and completed more units in this area most often secured and kept a job after graduation than did their counterparts who took a general education program. Students who secured jobs, as contrasted with those who did not, had higher IQ scores, and they came from families with higher educational levels. Those with stable employment records scored higher on achievement tests in reading and mathematics and earned more units in social studies and foreign languages and fewer units in science than did those with unstable job records.

4. Students from the three high schools did equally well on the ACT. The average student who took the test could be admitted to the university or college of his choice in Mississippi.

Phase II: Follow-up of 1976 Graduates After Two Years

1. Alumni of the 1976 graduating classes continued to do well. Over 54% of the students responding to the follow-up questionnaire were in further study. Nearly 38% were employed in jobs. Two percent were in the armed services and only 6.2% (10 people) classified themselves as "unemployed". Those unemployed were found most often to be women of average and above average academic aptitude. Since no category was provided for "married", it is suggested that matrimony was the major reason for unemployment among these graduates.

2. The average grade for the total group in college was 2.78 on a 4.0 scale or a C+. The average high school grade for this group was 82; hence, the college achievement for the group is about what is expected on the basis of achievement patterns of students at the major universities.

3. Factors which correlated more with college achievement were reading comprehension measured at the eighth grade level and achievement in the areas of social studies, arithmetic, reading, and science measured at the fifth grade level. Parents' educational level was the only non-academic variable related to college achievement among alumni, i.e., those students whose parents had secured more education earned higher grade point averages in college.

4. Over 20% of the respondents felt that their overall high school program was inadequate. More than 15% expressed dissatisfaction with their training in the verbal skills areas, and over 18% indicated that their training in mathematics was inadequate. It was interesting to note that those expressing the most dissatisfaction with their high school preparation were also those students who were the best prepared based on standardized achievement scores. These students also attended school more regularly than did those who were more satisfied with their

high school work. Currently, those who listed most of the complaints are enrolled in college.

5. The alumni, after two years, were generally satisfied with the number of courses offered in the various subject areas. Approximately 10% of the respondents suggested that more courses were needed in the areas of business, science, English, and mathematics.

6. No significant difference was seen in the college achievement of graduates from the three high schools in the system. Graduates from each of the three schools earned a C+ average.

Implications for Program Development

These data reemphasize the importance of providing a curriculum at all levels that will develop the reading and mathematical skills of students. It was observed that the grade point average earned by students in college was closely related to their achievement scores measured as early as fifth grade.

When the results of the 1976-77 study and the 1977-78 study, both conducted by BERE, are considered in conjunction, it appears that students are becoming more homogeneous in their achievement in language, reading, and mathematical skills in the early grades. In the most recent study, variances in achievement scores taken later turned out to be more significant predictors of ACT scores than did the earlier ones. In the earlier study the achievement scores collected for students in the fifth grade were more the determinants of variation in ACT scores. Since reading, language, and mathematical skills are so important for achievement on the ACT, it is recommended that the Louisville District continue to study methods of developing these skills in students, particularly at the junior and senior high school levels. This skill development is apparently needed by most students coming from homes with a low educational level of parents.

The placement record for vocational students not pursuing further study is admirable. The graduates get and keep jobs, even two years after completion of high school. Further evidence was offered for the need for a program in mathematics to emphasize computational skills.

The school programs of the Louisville Municipal Separate School District are functioning well in training students to enter either college or the world of work. Alumni, who would rate in the upper quarter of their senior classes, however, are more critical of their alma maters than are those students of average academic aptitude. Hence, more consideration should be given to a study of programs planned to better meet the needs of these students in the upper quarter. Areas of more need indicated by these students were in business, English, science, and mathematics.

MCCOMB PUBLIC SCHOOLS

The Problem

McComb Public Schools designed their 1977-78 local PREPS research project to investigate relationships between Title I participation status, attitude towards school, achievement test scores, and aptitude test scores. One particular point of interest was the determination of what differences, if any, might be observed in results depending upon the time interval used for the test scores. Finally, a determination of the effectiveness of the Title I programs in grades four through nine was to be made. Data were collected on nearly 1600 students in the McComb system in grades four through nine.

The Questions

This study was planned to answer the following questions:

1. What is the profile of student characteristics and performance in grades four through nine?

2. Are achievement test score gains from spring, 1977 to spring, 1978 statistically significant in the areas of reading, mathematics, or language arts?

3. Are there differences in the achievement gains in the areas of reading, mathematics, or language arts measured either from spring to spring or from fall to spring due to race?

4. Are there differences in achievement test score gains in mathematics for fourth- or fifth-grade students due to Title I status.

5. Are there differences in achievement test score gains in reading for students in grades four through nine due to Title I status?

6. Are there differences in student achievement test score changes from spring to fall test administrations due to differences in either race or sex?

7. Is the frequency of absenteeism from September to December related to achievement test score gains from fall to spring test administrations in the areas of reading, mathematics, or language arts?

8. Are there differences in the relationship of absenteeism from September to December and fall to spring achievement test score gains due to grade level, race, or sex?

9. Is student attitude towards school related to achievement test performance or changes in achievement test performance over time in the areas of reading, mathematics, or language arts?

10. What type of relationship exists between aptitude and achievement test scores in the areas of reading, mathematics, and language arts?

Methodology

This study included data collected on nearly all students in the McComb system from grades four through nine. The particular research design, variables, and statistical analyses are discussed in this section.

Research Designs

Three general research designs were utilized in the study. The first type, the single-group pretest-posttest design, was used for question two. In Campbell and Stanley (1966) notation, the design was:

$$O_1 \qquad X \qquad O_2$$

Where: O_1 is the pretest measurement

X is the treatment, and

O_2 is the posttest measurement.

The second type of design was the non-equivalent control group pretest-posttest design. Using Campbell and Stanley notation, this design was:

$$\frac{O}{O_1}1 \quad - \quad \frac{X}{X_2}1 \quad - \quad \frac{O}{O_2}2$$

Where: O_1 is the pretest measurement

X_1 is the treatment for group one

X_2 is the treatment for group two

O_2 is the posttest measurement, and

the dashed lines indicate intact group.

The non-equivalent groups design offers a bit more control against threats to internal validity than does the single group design (Campbell and Stanley, 1966). This design was utilized for questions three, four, six and eight.

The third type of design was an extension of the single group pretest-posttest design, and may be represented as:

$$\begin{matrix} O_{1a} & & O_{2a} \\ & X & \\ O_{1b} & & O_{2b} \end{matrix}$$

Where: O_{1a} is the pretest measure on variable A

O_{1b} is the pretest measure on variable B

X is the treatment

O_{2b} is the posttest measure on variable A, and

O_{2b} is the posttest measure on variable B.

The purpose for gathering information on more than one variable on two different occasions was to permit more sensitive analysis of the relationships between the two variables as well as to allow some time-ordered, causal inference conclusions to be drawn. This design was used for questions seven and nine.

Questions one and ten utilized a single group posttest-only design -- observing performance on one occasion only, with no comparisons across groups. Hence, the design is not presented here.

The reader should note that "treatment" in any of the designs may consist of school experiences or merely the passage of time. The only true differentiation in practice was that of the academic experiences provided for Title I and those provided for non-Title I students.

The Variables

The following variables comprised the set of data collected for each student: (a) grade level; (b) race; (c) sex; (d) California Achievement Tests, 1970 edition (CAT-70) subtest scores in reading, math, and language arts from Spring, 1977, Fall, 1977, and Spring, 1978; (e) Short Form Test of Academic Aptitude (SFTAA) scores in scale score (RSS) units from Spring, 1978; (f) number of days absent from September to December, 1977; (g) Title I participation status in reading and in mathematics; and (h) attitude towards school as measured by the Survey of Pupil Opinion (SPO), administered in Fall, 1977 and Spring, 1978.

Statistical Analyses

For question one, a simple breakdown by number of students and percentage was compiled for the variables of student sex, race, and Title I status in reading and mathematics in grades four through nine. In addition, mean scores and standard deviations were calculated for CAT-70 subtest scores from Spring, 1978.

For question two, dependent t-tests were used to determine whether gains from Spring, 1977 to Spring, 1978 were statistically significant for scale scores from the reading, mathematics, and language arts subtests.

Questions three through five were analyzed by using independent t-tests to compare the appropriate groups. In addition, non-standard analysis of covariance was used to analyze results for questions four and five. Analysis of variance runs were completed to analyze question six.

Simple Pearson product-moment correlations were calculated to answer questions seven, eight, and nine.

Question ten was analyzed by first examining all types of relationships(linear, quadratic, cubic, etc.) between aptitude and achievement test scores taken from the Spring, 1978 administration data. The best relationship was arbitrarily defined as the simplest equation which could predict achievement score from aptitude score with no more than .02 loss in R^2 (amount of explained variance). The resulting relationships were then noted and calculated.

All tests of significance were performed at $\alpha = .01$. Probabilities of observed results less than .10 are also included should the reader prefer some other value of α.

Summary

Conclusions

The following conclusions appear to be warranted from the data.

1. Students in all grade levels were observed to have significant mean gains in CAT-70 subtest scores from Spring, 1977 to Spring, 1978. This result held for all subtest areas.

2. There were significant differences in the mean gains from Spring to Spring and Fall to Spring on some of the CAT-70 subtests in some grades due to differences in race. No single, uniform trend, however, could be detected.

3. Students who participated in the Title I mathematics program had mean ADSS gains different from those of non-Title I students, depending upon what grade and what time interval was inspected. However, the traditional Model C analysis indicated a positive effect for the mathematics Title I program at both grade levels.

4. Similar comparisons of gains in reading due to Title I status indicated that the Title I students, except for the sixth grade, uniformly attained mean gains than did non-Title I students. The Model C analyses indicated a positive effect at all grade levels for the Title I program in reading.

5. Model C comparisons for Title I programs tended to favor Spring to Spring intervals if the goal is to show the Title I programs as having positive effect.

6. Comparing mean subtest gain for differences due to either race or sex yielded few significant results. In the lower grades, those differences which were significant favored non-white students. In the upper grades, white students fared better when significant differences were noted. Differences attributable to sex favored male students over female students.

7. Absences between September and December were noted to have only very slight, negative correlations with achievement test score gains. Only two correlations, for fourth grade students, were significantly different from zero.

8. No real differences between grade level and sex were noted for absences and CAT-70 achievement gain. Race, however, was related to absence rate in that non-white students had lower recorded mean absences than did white students.

9. Attitude towards school, as measured by the SPO, was found to be a relatively poor predictor of pupil achievement or of gain in achievement. In general, students at all grade levels responded in a fashion indicative of a positive attitude towards school. Attitude scores from Fall to Spring were moderately correlated. There was some evidence that, except for eighth grade, initial (Fall) attitude towards school may affect achievement in the Spring. Factor analyses of the instrument indicated somewhat different patterns for grades four through six and seven through nine.

10. The relationship between measured aptitude and achievement on the CAT-70 subtests was, for all practical purposes, a linear one at all grade levels. Scores from the aptitude tests and CAT-70 subtests were highly correlated at all grade levels.

Recommendations

Should a similar project be contemplated in the future, the following recommendations are made:

1. Obtain field-test data which may be used to determine the reliability and validity of the attitude instrument, or any other such instruments.

2. Make every possible effort to maintain pupil morale and motivation at a high level whenever the attitude instrument is to be administered.

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MERIDIAN PUBLIC SCHOOLS

Introduction

The Meridian Public Schools decided to investigate the problem of underachievement of high aptitude students in their school. It was believed that students who could be classed as high aptitude students were not achieving up to their expected level of performance. The intent of the study was to try and identify academic areas or attitudes which could be associated with underachievement. Although this goal was not realized, several descriptive statistics were identified.

To facilitate this study, 94 students in the eighth grade who scored in the top 25% of the nation in total aptitude as measured by the Short Form Test of Academic Aptitude (SFTAA) were identified from school records. A number of different measures were collected on each of the students including the following:

A. SFTAA scores for language, non-language and total aptitude.

B. ADSS and AASS from the California Achievement Test, 1970 edition (CAT-70) for the fourth, fifth, and seventh grades in all areas.

C. California Test of Mental Maturity IQ score for fourth grade students.

D. Grade point average of students in seventh grade work.

E. A thirty-question attitude survey concerning attitudes toward schools.

The study was designed to address the following questions:

1. What evidence of underachievement was identified for these studies?

2. What general attitudes could be identified for the students?

3. What was the relationship between the achievement scores and attitude scores?

4. What was the relationship between the achievement scores and the background variables of race, sex, IQ, and GPA?

5. What was the relationship between the aptitude scores and attitude scores?

6. What was the relationship between the aptitude scores and the background variables of race, sex, IQ, and GPA?

Before commenting on the results, some cautions must be mentioned. The data on these students were gathered from existing records and are subject to any errors which may have arisen in the original coding of the data. The sample is for only one year and only for one grade level. Therefore, generalizations should not be made to other groups without additional study. In addition, the sample size was adequate, but not as large as would have been desired, given the variables being studied.

Conclusions

The study of the ninth grade students in the Meridian Public Schools who have measured aptitudes in the top 25% in the nation according to the SFTAA did reveal some general findings. It should be stated that with no comparative data, especially for the attitude survey, every finding is subject to being answered by the statement that all students possess the stated attitude. Realizing this shortcoming, the study hopes to present some data which give rise to new questions concerning the achievement of this group of students as well as their attitudes about school.

A. It is obvious that the weakest area, in terms of achievement as compared to aptitude, is mathematics. Although mathematics was not found to be significantly below the expected level of achievement, it was the lowest area of the four investigated. An interesting comment is that the achievement for both spelling and mathematics was at the 79% nationally, yet spelling was found to be above the expected level while mathematics was found to be below the expected level. This condition could suggest that although relative performances in the two areas were equivalent, the students possessed a higher aptitude for mathematics achievement than they did for spelling achievement. Put another way, the greatest potential for growth among these students is in the area of mathematics.

B. The students who had the highest achievement and difference scores tended to have negative attitudes toward school, especially as it related to teachers understanding and helping them with their work. The negative attitude was most pronounced in terms of getting along with other students. However, these students did not appear to feel they were being pushed too hard in their academic work and appeared to feel that school work was serious business. There is no evidence to suggest that affecting a positive attitude in these students would lead to a change in their achievement, but it is an area for consideration. It should be noted that other studies have revealed that students with higher aptitudes tend to be more critical of the educational setting.

C. The analysis of the GPA for these students' seventh grade work was most revealing. The GPA had the greatest linear association with achievement scores in language arts and spellings, while little association could be found for mathematics, and practically none could

be identified for reading. Although the data offer no conclusive results, they do give rise to questions addressing the grading policies of the schools in this study. It should be noted that, with the exception of mathematics, no significant difference could be identified by sex or race. In mathematics, a slight superiority was identified for males.

This study should not be taken as an end in itself, but rather as a first step in a process to do a thorough evaluation of the academically gifted students in the Meridian Public Schools. The key points to be considered are the students' attitudes toward their fellow students and their mastery of the various criterion areas in mathematics.

MOSS POINT PUBLIC SCHOOLS

Introduction and Background

The Moss Point Municipal Separate School System is composed of nine schools and 6,613 students. The following is a breakdown of schools and school populations:

Moss Point High	Grades 10-12	1,384 students
Magnolia Junior High	Grades 7-9	896 students
Ed Mayo Junior High	Grades 7-9	851 students
Charlotte Hyatt Elementary	Grades 1-6	327 students
East Park Elementary	Grades 1-6	579 students
Escatawpa Elementary	Grades 1-6	1,062 students
Kreole Elementary	Grades 1-6	739 students
Orange Lake Elementary	Grades 1-6	287 students
West Elementary	Grades 1-6	511 students

Primary students from each of the six elementary schools were involved in the research data. The total Moss Point school population is fifty percent black and fifty percent white. Kreole and East Park Elementary schools are predominantly black, Orange Lake and Escatawpa elementary schools are predominantly white, and Charlotte Hyatt and West elementary schools are fifty percent black and fifty percent white.

The Moss Point Municipal Separate School System is currently considering curricular changes in certain areas of the academic program. One area of concern is the primary reading program which encompasses grades one through three.

The reading program is designed to provide the best possible instruction for all students in grades one through three. This program is organized in a progressive and sequential manner based upon the Stanford Achievement Test reading scores and the "Reading Skills Continuum" developed by the Moss Point teachers.

In the past, students entering first grade may have had as many as three or four teachers. These teachers would instruct a designated group of students in all subjects for a period of two or three weeks, and then rotate to a new group of students for the same period of time, until all teachers had taught all students. After this the cycle would begin again and continue throughout the year.

During the 1977-78 school year students in each elementary school were placed alphabetically in grades one and two and by homogeneous grouping in grade three. Although this appeared to be an improvement, teachers, parents, and administrators have discussed and implemented a new plan for the 1978-79 school year.

Purpose of Study

Reading is an essential skill, not only academically, but also throughout an individual's life. The reading teacher realizes that not all individuals have the capacity to become proficient readers. The purpose of the reading program is to help each student develop his reading potential to the fullest. Therefore, he will function more effectively in his early school achievement and build a firmer base for more proficient reading throughout his academic years, as well as the rest of his life.

The purpose of this longitudinal study was to analyze the reading achievement scores for primary students during the past three years.

Basic Assumptions

The basic assumptions underlying this longitudinal study were as follows:

1. It was assumed that students studying with one reading teacher, instead of several throughout the year, would have higher levels of achievement. This could be measured by a standardized achievement test.

2. It was assumed that teachers trained in a certain area should be permitted and encouraged to teach in that area (reading), and would, therefore, feel better about their jobs, their students, and themselves.

3. It was assumed that students in grades one through three needed someone to whom they could anchor themselves and/or with whom they could identify. The reading teacher would be a stable factor in the child's school life and fill this need.

4. It was assumed that there would be better administrative control because the teacher would set yearly goals for the specialized area (reading) in which she/he was teaching.

5. It was assumed that the teachers would be happier and their aspiration levels would be higher if only one major preparation was necessary. The teacher would have a wide range of materials available and ready to be used with students on various reading levels.

6. It was assumed that the school system would have a built-in foundation for accountability in the basic skill areas (reading) as measured by readiness and/or standardized achievement test scores.

Findings

1. Growth is occurring at all schools. Kreole Elementary School is a prime example of this. The scores were the lowest at this school, and although low, they are gradually improving. Since scores are improving, it could be suggested that changing the reading program may be associated with this change. However, more data must be developed before such a conclusion could be drawn.

2. Retention for a student is related to readiness and achievement scores. Those students retained had above average potential as measured by high readiness and low achievement scores.

3. Although there appears to be a race factor still present, first graders, for the past two years, show no difference after readiness adjustments are made.

4. Data collected indicate that students from private kindergartens tend to score higher regardless of race, and students with no kindergarten experience do better than students who have attended a Head Start center.

5. Although the assumptions associated with teacher attitude were mentioned earlier, no data were collected for these areas. Future studies must address this issue.

Conclusions

We plan to continue the project with the new first grade while we follow it through with the present fourth grade.

The teachers will use the skills continuum for reading in grades one through four and their individual reading programs will be developed from the results.

In grades one through four student placement will be based upon previous test results, teacher appraisal, and the motivation of the student.

We learned that if in-school research projects are going to be meaningful, there must be some systematic data collection procedure put into immediate operation.

We also learned that if school personnel are to effectively employ the research done and follow through with the related activities, schools must move quickly to dispense with the traditional approaches and break the restraints that prevent them from acquiring new knowledge, and move forward on their own. Teachers and administrators need to know that risks are high, failures are probable, and that effort alone, if viewed critically, will more than likely bring eventual success.

NATCHEZ-ADAMS PUBLIC SCHOOLS

Introduction

The purpose of this study was to investigate the achievement of seventh year students in reading and mathematics skills as measured by the California Achievement Test, 1970 edition (CAT-70) in the Natchez-Adams School District. Previous studies had indicated that, while 1st grade students appeared to be scoring near the national mean, students in junior high schools had much lower scores in terms of national percentile scores. The following questions were used to structure the study:

1. What progress has been made over a five-year period of time in terms of achievement test scores in the areas of reading and mathematics?

2. What progress has been made over a five-year period of time in terms of adjusted achievement test scores in the areas of reading and mathematics when adjustment was done for aptitude as measured by the Short Form Test of Academic Aptitude (SFTAA)?

3. What progress has been made over a five-year period of time in terms of achievement test scores in the areas of reading and mathematics for children who have been divided into "low", "average", and "high" groups based on their readiness and their IQ?

4. What pattern for achievement was produced each year in terms of achievement scores in the areas of reading and mathematics when readiness and aptitude were considered?

This study was designed to answer each of these questions using data collected for subjects from the school district. The close resemblance to the 1976-77 PREPS project (PREPS-77) should not go unobserved. Where observations between studies were warranted, they were made.

Data Collection

The following variables were used in this study. The achievement test for reading was the reading totals for the California Achievement Test 1970 edition. The achievement test for mathematics was the mathematics totals for the same instrument. The two covariants studied were the Metropolitan Readiness Test (MET) and SFTAA. However, adjustments in scores were based on the SFTAA, although it was given after much of the longitudinal data were acquired, since it accounted for the most variance in the test scores.

The reading test scores for all five years from the CAT-70 were given in Achievement Development Scale (ADS) scores. Likewise, the mathematics test scores for all five years from the CAT-70 were given in ADS scores. Studies were divided into three groups, "low", "average", and "high", according to both their MET and SFTAA. In addition, students were investigated in terms of those who had been retained at least once and those who had not been retained in their school experience. Finally, students were examined in terms of the background variables of race and sex.

There were four different junior high schools which were highlighted in the study. The schools were coded as follows:

School 1 - Martin Junior High School
School 2 - McLaurin Junior High School
School 3 - Morgantown Junior High School
School 4 - Thompson Junior High School

In the PREPS-77 study the report analyzed the data by school. However, statistical analysis, using analysis of covariance for both reading and mathematics achievement test scores for each of five years, revealed no significant difference among the four schools. Therefore, the study addressed only district level data. In addition, the data for the study identified approximately 30 students who were present for years four, five, and six, but not years two and three. However, statistical analysis using t-tests revealed no significant difference in the scores between the group which was present for all years and the groups on which data were missing for the first two years. Therefore, data were used on all available subjects including those who had missing data on the first two years.

Final Conclusions

This study represents the achievement patterns of students in the Natchez-Adams Public Schools from year two through year six. The one overriding conclusion which must be addressed is the noticeable and dramatic drop which occurs during the fourth year of these students' programs and the fact that the drops seem to never recover. It may be, since test dates were out of sequence at this time, that the drop did not occur until during the fifth grade year. However, it is most apparent that by April of the fifth year a drop had occurred and it continued in the sixth year. Most surprising is the fact that this drop occurred for all ability groups in both subject areas and was even evident when students were analyzed in terms of those who had been retained and those who had not been retained.

This study cannot address any cause for this occurrence, but rather notes its existence and calls for investigation. It should be noted that this drop in achievement at the fourth (fifth) grade level is not unusual in Mississippi which this office has identified before. However, such a

drop could not be classified as normal since, when these children drop from their earlier achievement patterns, it implies that children who were actually performing at a lower level of achievement earlier in their careers must rise to a higher level to compensate for this drop.

It is encouraging that at one point in these students' careers, they were showing a strong achievement pattern. The occurrence provides support for the idea that with proper investigation and changes in their programs, they could return to this previous level of achievement. In conclusion, no quick judgements should be made or simple solutions sought without first pursuing a complete investigation of the program. In addition, remember that the problem identified here was for the 1974-75 school year. Changes that have already been made may have eliminated this problem.

NEWTON PUBLIC SCHOOLS

Introduction

The Newton Public Schools developed a special program called "transition classes". These classes were designed for students needing special assistance to acquire basic skills. Students were given intensive basic skills instruction. This program had two goals: (1) to aid students with minor basic skills problems to resolve these problems; and (2) to facilitate students' progression back into the regular classroom. If the first goal is not met, then the classes are designed to improve students' performance in the basic skills. The program objective is to aid students in acquiring basic skills and is not meant to be a "slow learning" class with a new title. For administrative purposes the students in transition classes were considered as Title I students, since all students in this program qualified for Title I services.

All students, however, who were qualified to be in the transition classes, were not in these classes. Each student assigned to the transition class was first scheduled for a parent-teacher-principal conference. If parents felt that their child would benefit by being in the transition class, then the child was assigned to the program, i.e., a student was assigned only with parental consent.

This program report does not attempt to describe the entire program, but rather gives results in terms of selected achievement and attitude test scores. Results from each grade are discussed separately. Although each grade may have slightly different data, the following questions were addressed for grades two through six:

1. Is there a significant difference between the pretest and posttest scores in reading or mathematics?

2. Is there a significant difference between the transition and non-transition students' scores in reading or mathematics?

3. Is there a significant relationship between the students' attitude and achievement scores?

4. Is there a significant relationship between pretest and posttest scores in reading or mathematics?

The following scores were collected for the students. All pretest scores were collected during the spring of 1977 while the attitude scores and the posttest scores were collected during the spring of 1978.

Pre Reading Scale Score
Pre Math Scale Score
Pre Reading NCE Score
Pre Math NCE Score
Pre Reading Predicted Score
Pre Math Predicted Score
Pre SFTAA in RSS
Post Reading Scale Score
Post Math Scale Score
Post Reading NCE Score
Post Math NCE Score
Post Reading Predicted Score
Post Math Predicted Score
Post SFTAA in RSS
Piers - Harris I (Behavior)
Piers - Harris II (Intellectual and School Status)
Piers - Harris III (Physical Appearance)
Piers - Harris IV (Anxiety)
Piers - Harris V (Popularity)
Piers - Harris VI (Happiness and Satisfaction)
Piers - Harris Total

Data Analysis

One way the data collected in this study were analyzed, was to use non-standard analysis of covariance. This model allows one to investigate groups with a difference in terms of such attributes as aptitude. For this study, it is obvious that students in the transition classes would have lower achievement scores than students not included in the program. In addition, an independent t-test was used to compare Title I students in the transition class with Title I students in the traditional program. Finally, correlations were used to investigate the relationship between achievement test scores and attitude scores.

Conclusions

The results of the transition class analyses tend to suggest that the program was successful in facilitating students' basic skills achievement as opposed to a traditional Title I treatment situation as practiced in most elementary schools. It should be pointed out that the small sample sizes and the individual teacher personality could have had tremendous effects on the transition students, hence, no definite conclusions may be drawn. The data indicate that good results occurred this year, but longitudinal data dealing with new students and new teachers must be collected before any firm statements can be made.

The following general observations were made from the data.

A. Participation in the transition class tended to result in the largest pre- to posttest growth for the lower elementary children.

B. Participation in the transition class appeared to result in greater change in mathematics scores than in reading scores.

C. The data suggest, as is generally true in Mississippi, that the higher the student's grade level, the lower average percentile ranking, especially in reading.

D. There was a decline in percentile standing in both reading and math for non-transition class students in the third grade, as well as a decrease in fourth grade transition group students' percentile rank in reading from pretest to posttest.

E. An unusual amount of growth was noted for the total group in fifth grade math. This mathematics program should be carefully examined to identify what particular aspects of the instruction may be associated with the gain in math achievement in this grade.

F. The data suggest that the students in Newton are performing near or above their expected level of performance based on aptitude for mathematics for all students.

G. The data suggest that the students in Newton are performing below their expected level of performance based on aptitude for reading for all students. There would seem to be room for improvement in reading for all students.

One important question to consider is: What are the effects of students remaining in the transition program for two years? A confirmation of this study could yield such data.

PASCAGOULA PUBLIC SCHOOLS

Introduction

The Pascagoula Public Schools are maintaining a basic data-base system which contains both academic and background information on students. The data-base was begun in 1977 using only first grade students. This year, 1978, data were recorded on both first and second grade students. The list of variables coded in the data-base are given in the report.

There are many problems connected with developing and maintaining a data-base. For instance, not all the cases have all the data for all the variables. Therefore, the sample on which analysis is conducted may be less than the actual number of cases. The first grade data-base contains 940 cases, and the second grade data-base contains 941 cases. There were only 528 of the 941 students who had both first grade and second grade reading scores, while 524 students had first grade and second grade mathematics scores. There is no explanation for the missing cases. However, one should not immediately assume these missing cases represent students who either left the system or moved into the system for the first time. In addition, it was discovered that students who were retained in the first grade were tested again using the first grade test. Therefore, no comparison could be made for these students with the rest of the second year students. This factor further reduced the size of the data set.

The data-base did have certain problems. There were several cases where data were not in line with reasonable expectations. Therefore, these untenable pieces of data were removed. It is believed that for the data-base to be more tenable for making decisions within the district, it should be submitted for analysis immediately following the administration of the tests.

The data from the data-base were analyzed for both first and second grade students for the 1977-78 school year. It must be understood that first grade data analyses were only reported in terms of actual scores. This means that no covariant, such as pretest scores or aptitude scores, were present to assist in explaining the results. Therefore, any statements concerning first grade students should be considered as a description of results and not as an indication of value or goodness for a program. The second grade data analysis did have the benefit of first grade pretest scores. The analysis addressed the following questions.

Questions

1. Is there any significant difference in reading and mathematics achievement scores when considered in terms of parents' educational level?

2. Is there any significant difference in reading and mathematics achievement scores when considered in terms of parents' economic level?

3. Is there any significant difference in reading and mathematics achievement scores when considered in terms of the preschool experience of the child?

4. Is there any significant difference in reading and mathematics achievement scores when considered in terms of the sex of the child?

5. Is there any significant difference in reading and mathematics achievement scores when considered in terms of the race of the child?

6. Is there any significant difference in reading and mathematics achievement scores when considered in terms of the Title I services provided for the child?

Conclusions

The conclusions of this analysis led to several interesting observations although there was no one goal being pursued by the study. It was obvious that the background variables of parents education level and parents economic level are most important in describing variance in achievement test scores, at least for second year students. The results revealed, that as far as the rate at which students were achieving, the higher the parents educational level and parents economic level, the higher the rate of achievement between pretest and posttest areas. In addition, the actual achievement test scores are positively related to the above mentioned attributes.

Most noticeable is the fact that for the lowest levels of educational and economic attainment, the resulting achievement patterns were very flat or stable regardless of pretest scores. This means that for these groups, there exists little variance in posttest scores, regardless of pretest scores.

A second consideration should be the direction such a data-base should take. Although no reason was apparent, approximately half of the students, on whom data were collected during the first year, had no data recorded during the second year. If such losses of data are to occur, it would be obvious that it would be most difficult to make any interpretations. This loss of data could be related to student mobility, clerical errors, or a combination of the two. This problem will be most noticeable if the missing data relate to some unique group of students such as low achievers.

The results of this study do give rise to future research studies. One examination could address itself to an investigation of why there was so little variance in test scores among students from low socio-economic backgrounds even though there was a wide range of pretest scores. A second examination would logically address what type of activities could lead to some change in the achievement of these students.

This study has revealed that maintaining a student data-base is a complicated, but rewarding activity. The missing data which were identified point out the ultimate importance of good clerical procedures in collecting data. It must be a high priority item with adequate personnel assigned. However, by coding the information, a district can increase the utility of its data many fold.

Finally, it would appear that any future curriculum analysis in Pascagoula would need to be most conscious of the socio-economic background variables. Unless activities can be identified which can affect achievement patterns of these children, the problem of underachievement for these children may continue.

STARKVILLE PUBLIC SCHOOLS

Introduction

The Starkville Public Schools conducted a longitudinal study of Title I achievement test scores on fifth grade students using historical data. The study covered the six year period from 1972 through 1977. The scores were collected in scale score form for both reading and mathematics. The district was concerned about the effectiveness of the Title I program and wanted to determine if any pattern of achievement was being established over the six year period.

The Title I program had experienced many changes in this time period. The size of Title I classes had dropped since 1972 while the basic instructional mode had remained the same. In addition, students were also receiving computer assisted instruction for short periods of time each day in reading and mathematics by the end of the time period. It was the purpose of this study to gather data in a systematic fashion to aid in future decision making activities concerning the instructional offerings of the Title I program.

To aid in the data analysis the following questions were used:

1. What changes occurred in the pretest and posttest achievement scores of 5th grade students over a six year period?

2. What changes occurred in the growth of students from pre- to posttest scores of fifth grade students over the six year period?

3. What changes occurred in the pretest and posttest achievement scores of the fifth grade students by sex over the six year period?

4. What linear relationships were identified between the dependent variables of reading and mathematics achievement posttest scores and the independent variables of the pretest scores for reading and mathematics, Title 1 class size for reading and mathematics, age and sex?

Results

Addressing Question One, reading scores for the subjects experienced an initial drop through 1975 but turned up again for the last two years. In mathematics, there was a sharp increase in scores for the latter years of the study after the students had been in Title I classes, leading us to conclude that inclusion in Title I classes had made a definite improvement for the students.

For Question Two, we considered changes in growth of student achievement over a six year period. It was found that the first four years showed a significant gain in achievement while the scores of the last two years did not show a gain that could be considered significant, with reading achievement falling lower than mathematics.

Question Three, "What changes occurred in the pretest and posttest achievement scores of the fifth grade students by sex over the six year period?" Results showed that females entered the program with higher entry scores and tended to achieve higher scores throughout the program in reading. In mathematics the scores showed no significant differences when examined, that is to say, males and females scored relatively similar patterns over time.

Question Four, "What linear relationships were identified between the dependent variables of reading and mathematics achievement posttest scores and the independent variables of pretest scores for reading and mathematics, Title I class size for reading and mathematics, age and sex?", was answered in the following data:

a. A breakdown of the years in the study showed that pretest scores in reading and mathematics were found to make a significant contribution in explaining variance.

b. The variables of sex and class size were found to be making significant contributions, in that superior scores by females were more often found and class size was positively correlated with achievement; that is, the larger classes had higher reading and mathematics scores.

Conclusions

In conclusion, the longitudinal study of Title I reading and mathematics tends to show:

1. The initial abilities of students in both reading and mathematics as measured by pretest scores dropped gradually over the first four years of the study with increases the last two years of the study.

2. The reading program appears to be doing a satisfactory job in the first four years of the study with some problems developing the last two years of the study, with most problems associated with male students.

3. The mathematics program appears to be doing a satisfactory job for the first three years of the study, having minor problems the next two years, and displaying a positive growth situation for the last year of this study.

Such a longitudinal study can be most valuable to decision makers as they seek to make instructional decisions about an ongoing program. However, any such study must first have a systematic testing program which can yield compatible data over time. Although such data gathering activities tend to cause clerical headaches, they do provide a useful source of information for decision makers. Oftentimes the results are not surprising, but they allow decision makers to be able to support their hypotheses with data.

TUPELO PUBLIC SCHOOLS

Introduction

The Tupelo Public School District has been involved with the Distar Program which is designed to help underachievers acquire the basic skills that ideally will lead to better achievement in the future. It was the desire of the local administration to evaluate this program. During the 1976-77 school year, 137 first grade children of all ability levels were placed in the Distar Program (treatment group). At the end of the year, a group of students in the regular program (control group) was matched by ability with the students who had received Distar training. This action was taken in all the schools to see if Distar might be a valuable curriculum for all the children. The treatment and control groups were then subdivided into two groups based on academic aptitude. Those who had IQ scores of less than 100 were in the lower group and those who had IQ scores of 100 or greater were in the higher group.

Data for basic skills achievement were acquired from scores on the California Achievement Test, 1970 edition (CAT-70) and the aptitude data (IQ scores) were acquired from the Otis-Lennon Test. The data were analyzed using analysis of covariance with IQ as the covariate and CAT-70 scores as the dependent measures. The research design used was a post-test only design. All design work and data collection were conducted by the local school district personnel.

Results

It was determined that a significant difference at the .05 level could be identified for only reading and spelling with no significant difference being identified for language arts or mathematics. The differences indicated that Distar was doing a better job of training underachivers in the basic skill areas of reading and spelling as measured by the CAT-70.

However, it was desired that data be made available on how the Distar Program affected students of low and high aptitude as measured by IQ. The data reflect that Distar was doing an effective job in the areas of reading and spelling. When the data for those students having higher aptitude were analyzed, a different picture was projected. For these students, the regular program was significantly superior to the Distar Program in terms of the CAT-70 scores for language arts, mathematics, and spelling. This finding indicates that Distar experiences were not advantageous to higher aptitude students but Distar appeared to have some advantage for lower aptitude students when scores on the CAT-70 were used as criteria for establishing the goals of the program.

In addition to the original study, a second study was conducted to provide more data about the program if the guidelines for participation

in the Distar Program had been strictly adhered to. This study compared the two groups of students who met the academic criteria for participation in Distar. The treatment group had received Distar training and the control group received regular classroom experience. Again, analysis of covariance was used as the research design. Surprisingly, the regular program was found to be superior in the areas of language arts and mathematics while Distar was not found to be superior in any area.

However, there is one fact that would help explain this phenomenon. The regular classroom students appeared to have a higher mean IQ than those students in Distar even though they all qualified for the program. (The mean IQ for the qualified students in the regular classroom was 95.6. The mean IQ for qualified students in the Distar program was 86.9. Analysis of covariance can reduce the amount of systematic differences between groups on the covariate, but is not capable of completely eliminating bias.) This seems to indicate that the Distar Program at Tupelo tends to take those students who appear to need the most help in terms of aptitude and places the higher ability students who qualify for Distar participation in the regular classroom. If there is a true relationship between the effectiveness of Distar and aptitude level of the student, then this would possibly be a valid method of assigning students to the Distar Program.

Conclusion

The evaluation indicates that for first grade students in the Tupelo Public Schools for 1976-77 the Distar Program was effective under certain constraints. The lower the aptitude of the students, the greater the potential of Distar to be significantly effective in the areas of reading and spelling. However, serious consideration should be given to the Distar Program in the areas of language arts and mathematics since the program failed to demonstrate an effectiveness, compared to the regular program, even with the lower ability children. The children might fare as well in a regular classroom for these basic areas. This would enable the school district to offer services to more children through the Distar format in the areas of reading and spelling. In addition, higher ability students appear to make more gains in a basic skill sense by being in a regular classroom than by participating in the Distar Program.

In conclusion, it must be remembered that the measurement of first grade children is a very imprecise activity at best for many reasons which will not be listed here. In addition, it must be remembered that the goals of this evaluation were embodied in the CAT-70 which represents local policy and not total truth, in terms of basic skills. Finally, before any long-range decisions are made, a longitudinal-type study should be conducted to see what patterns persist at higher grades. Given these considerations, the data are valid for effecting a decision concerning the Distar Program in the Tupelo Public Schools.

VICKSBURG PUBLIC SCHOOOLS

Introduction

The Vicksburg Public Schools are completing the second year of a special Title IV-C Project designed to improve student achievement in language arts. Although the project has a more complex set of activities, the project basically seeks to improve language arts scores by providing students with training on a typewriter.

For this evaluation, data were collected for reading, language arts, and spelling for fifth and sixth grade students from the California Achievement Test, 1970 edition (CAT-70). Each student was tested in the fall and again in the spring. A treatment group and a control group were utilized in this evaluation. Although the students were not randomly assigned to these two groups, they were matched to the extent that no significant differences could be identified in either pretest scores or aptitude as measured by the Short Form Test of Academic Aptitude (SFTAA). In general, all students utilized in the study were considered to be functioning below grade level as measured by the CAT-70.

The data were analyzed in several ways to assure that a comprehensive look was given to the program results. To begin, an independent t-test was conducted on the pretest and posttest scores between the treatment and the control groups for both fifth and sixth grade students. Next, a different score was calculated for the various pretest and posttest results for both grades by subtracting the anticipated achievement score which was derived from the SFTAA from the actual achievement score on the CAT-70. Then within the two groups, a dependent t-test was conducted to determine if a significant change had occurred over the school year. Finally, normal curve equivalent (NCE) scores were utilized to aid in determining if the two subgroups had significantly changed their relative position with reference to the national norms over the school year as identified by using a dependent t-test.

Conclusions

In general, there was little evidence that the special Title IV-C Program led to significantly superior achievement when compared with the control group. However, some evidence was found, other than in the actual achievement test scores, which indicates some positive results for the treatment group. In looking at difference scores the fifth grade treatment group was identified as superior for language arts and the sixth grade treatment group was found superior for spelling. Looking at NCE scores and their relative change over the school year, the sixth grade treatment group was doing better in the areas of reading and spelling. No real difference could be identified for the fifth grade treatment group.

Therefore, the evaluation revealed no difference in overall actual achievement between the groups. However, some evidence is available to support superior performance by the treatment group in terms of changing the students' relative positions, in terms of national norms, and also in terms of the students' own anticipated achievement scores. If these types of changes are considered as valuable by the decision-makers, then evidence has been identified to support the program. In conclusion, the program should carefully examine the delivery of the treatment to students to assure that the program is being administered as was originally intended. A failure to deliver the prescribed experiences could be a major factor in a product evaluation, such as this one, by failing to identify any significant differences. Without a process or formative evaluation system, the question raised above can not be adequately addressed.

The equation which resulted in the best R^2 value (amount of variance in the dependent variable which was "explained by", or shared in common with) variance in the independent variable was used unless a simpler equation could be used with less than .02 loss in R^2.

Finally, analysis of covariance runs were performed, comparing participants in the various programs on second grade achievement test scores, after adjusting for initial differences on first grade achievement test scores. Tests of significance were made at the overall mean score for the first grade tests.

All significance tests were performed using an $\alpha = .01$.

Conclusions

The following conclusions appear to be warranted from the data presented in this report.

1. Concerning attitude towards school: (a) There was a systematic decline in scores, beginning with Spring of first grade to Fall of second grade and Spring of second grade. (b) Title I students generally declined less in mean attitude score than did non-Title I students. (c) Tutorial students generally declined less in mean attitude score than did non-tutorial students. (d) Pupils participating in Kindergarten programs had the most positive attitude on the average, of all preschool groups at the end of first grade. (e) Retained and non-retained students showed nearly the same amount of decline, although non-retainers generally had the more positive attitude.

2. The different classes were generally unequal in mean achievement test performance.

3. When classification variables were used to predict ADSS subtest scores, Title I participation, tutorial participation, retention, and number of years in preschool, whenever included in the regression equation, were negatively related to scores.

4. ANCOVA's on second grade ADSS, after adjusting for first grade ADSS, indicate that: (a) non-tutorial students generally outperformed tutorial students; (b) non-Title I students uniformly gained more than did Title I students; (c) non-retained students' mean scores were significantly higher than those of retained students; and (d) kindergraten participants generally had the best predicted scores, while students who had attended Headstart generally had the poorest scores of all preschool groups.

5. From first grade to second grade, the CAT-70 achievement scores increased, on the average, but the growth was not always predictable. For reading vocabulary and language arts, the relationship was strong; for math, reading comprehension, and especially auding, the relationship of scores across grades was weak.

6. Differences in language arts scores were correlated with differences in auding scores from first to second grade.

7. Attitude towards school, as expressed by total score on the SSI, was not correlated with number of absences.

SECTION II:

PREPS OVERALL PROJECT

The Relationship of Selected District, Building, Instructor, and Classroom Variables to Achievement Test Performance

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The Problem

The PREPS overall project for the 1977-78 school year investigated the relationships between selected teacher, school, and classroom variables with achievement scores for fifth and eighth grade students on the California Achievement Test, 1970 edition (CAT-70). The aim of the study was to determine whether and how any systematic variation in pupil performance on the CAT-70 was related to some fairly common variables concerning a school district's allocation of instructional time to the various subject areas; a school building's internal staffing structure, programs, and course variables; a teacher's preparation for the profession and perceptions of the school's programs; and the actual management of time within the classroom. While the majority of the variables included were of a general nature (e.g., class size in science classes) rather than of a specific nature (e.g., whether or not the metric system is taught at the elementary school level), they were identified for inclusion in the study since they can be readily identified, measured, and reported. Also, general variables of this type are likely to be more amenable to change at the district, school, and classroom level, once such a decision has been made.

By way of historical background, the PREPS 1977-78 overall study essentially comprised an extension and expansion of the PREPS 1976-77 overall study (Saterfiel, 1977). In the 1976-77 study, a more modest set of variables was examined for any systematic relationship with achievement test scores on the CAT-70. One of the few consistent results observed was that the proportion of students within a school district receiving free lunch services was negatively related to achievement development scale scores (ADSS) on the CAT-70. As free lunch is indicative of relative socio-economic status (SES), this outcome directly translated into the well-established finding that a student's SES is a powerful predictor of success in school (Coleman, 1975).

Research Questions

The general research questions under investigation concerned district, building, classroom, and teacher variables, and their relationships to student scores on the CAT-70. Specifically, the questions were:

1. How are certain district-level instructional program variables related to fifth-grade students' performance on the CAT-70?

2. How are certain building-level instructionally-oriented variables related to fifth-and eighth-grade students' performance on the CAT-70?

3. How are certain teacher preparation variables and teacher perceptions of a school's instructional program related to fifth-and eighth-grade students' performance on the CAT-70?

4. How is the teacher's allocation of classroom time related to students' performance on the CAT-70?

These particular questions summarize the scope of the study. Fifth and eighth grades were included in the study for two reasons: (a) scores from the statewide assessment program on the CAT-70 were available for these two grades; and (b) only two grades were selected to keep the data-gathering effort managable. For the classroom time management variables (question 4), only fifth grade classes were used due to the large amount of time required to collect the information. The district-level variables (question 1) were also collected for only the fifth grade students, for reasons which will be more apparent in the discussion of the variables.

The data were collected using four separate forms (see Appendices A, B, C, and D). The forms were completed by classroom teachers, school building administrators, and local PREPS coordinators.

Each of the 16 member districts of PREPS that were members as of September, 1977, agreed to participate in the overall project.

Variables

The variables utilized in the data analyses are classified by the appropriate research question.

District-Level Variables

The district-level variables were included in order to determine what effects, if any, prior instructional programs may have had for fifth-grade students' CAT-70 performance. These variables included: (a) number of minutes of weekly reading instruction received in grades 1-3 (both group and individual); (b) number of minutes of weekly mathematics instruction received in grades 1-3; (c) number of minutes of weekly language arts instruction received in grades 1-3; (d) whether special programs for slow readers were provided (federal or nonfederal) in grades 1-3; and (e) whether special programs for low achievers in mathematics were provided (federal or nonfederal) in grades 1-3.

The reasons for collecting only these data for fifth-grade students were two-fold: first, the likelihood of obtaining accurate information for these variables as far back as eight years ago was small; second, by the time students reach the eighth grade, the impact of these variables was likely to be far less potent than it might be for fifth-grade students.

School Building Variables

The school building variables were identified and included in order to determine what effects, if any, some major aspects of the instructional programs at the building level may have on fifth- and eighth-grade students' CAT-70 performance. These variables included: (a) number of minutes of weekly instruction and average class size in major subject areas; (b) expenditures per ADA (both instructional salaries and supplies); (c) grades included and class structure; (d) whether extracurricular activities were provided; (e) number of students who were retained, transfers, or receiving free lunch; (f) perceived amount of time students were on-task; (g) whether special programs in reading or math were provided for below average and above average students; (h) whether regular teachers provided reading or math instruction; and (i) perceived change in pupil classroom behavior over a five-year period.

Teacher Variables

The teacher variables were included to determine what correspondence existed, if any, between the preparation or perceptions of teachers and fifth and eighth grade students' CAT-70 performance. These variables included: (a) type of teacher-training institution attended; (b) level and area of preparation/certification; (c) perceptions of pre-service and in-service training; (d) perceptions of school's programs; (e) perceptions of the instructional value of practice activities and pupil time on-task; (f) perceived need for more content area in-service training; (g) perceived change in pupil behavior over a five year period; and (h) classroom structure and provision of noncontent experiences to students.

Classroom Management Variables

The classroom variables were included to determine what relationships, if any, the actual allocation of classroom time may have with fifth-grade students' CAT-70 performance. These data were collected through in-class observations. The variables included were: (a) time devoted to delivery of instruction (both on- and off-task); (b) time devoted to directed student work (both on- and off-task); and (c) time taken for noninstructional teacher behaviors (correcting misbehaviors, interruptions, and "mechanical" operations).

Dependent Variables

In all cases, the dependent variables used in this study were scores from the CAT-70. Scores on both actual achievement (ADSS), anticipated achievement (AASS), and the differences between ADSS and AASS scores were used in all total subtest areas of the CAT-70.

Limitations

There are five important limitations which the reader should keep in mind while reading this report. These are:

1. The achievement test scores from the CAT-70 were drawn from the 1976-77 school year, while the other variables were drawn using the 1977-78 school year as a baseline. Thus, the assumption is made that what district, building, and classroom activities occurred this past year as measured by the instruments used, were in fact the same as for the 1976-77 school year. The primary reason for this time differential is that the statewide assessment scores for the 1977-78 year would not have been available quickly enough. As of July 1, 1978, the scored reports for 1977-78 had not yet been delivered to all districts.

2. There was no collection of data which could be used to establish the reliability or validity of any of the data-gathering instruments used. The tacit assumption, therefore, is that all respondents were perfectly accurate and completely honest in filling out the forms.

3. The measured variables may or may not be related to the desired variables. As an example, the CAT-70 scores may not be the best indicators of a pupil's academic performance because of the relatively narrow scope (which may not mirror the curricular programs in any participating district) of the test. Collecting classroom management data at only

one point in time implies that this characteristic shall not change during the school year. These particular constraints, though, are primarily attributable to both the need for uniform data and the short time frame in which the study was conducted.

4. The sample sizes at each grade level were relatively small. For analysis reasons, the school building was considered the experimental unit. So, while many students were indirectly included, only a modest number of schools were included. For the different analyses, the total numbers varied depending on whether or not complete data for a school were available. Overall, the number of schools involved with fifth grade data was never larger than 97, and the number of schools supplying eighth grade data was never larger than 37.

5. This study did not involve the systematic manipulation of variables. As a result, although relationships were often observed, inferences of cause-effect relationships are highly tenuous. For example, the incidence of drug addicts increases each year along with the total number of guitar strings sold each year. It is absurd to conclude, however, that guitar strings cause drug addiction, or that addiction to drugs results in increased guitar string sales.

With these caveats in mind, the reader may better appreciate the results of the study.

Methodology

This section briefly describes the procedures by which the project was conducted.

Research Design

The emphasis of this study was the accurate description of relationships among variables, rather than a planned manipulation of treatment variables. Kerlinger (1973) would classify the study as ex post facto research instead of a laboratory, or field experiment. Therefore, no Campbell and Stanley (1966) design type was appropriate. The study, then, was more exploratory, in which the goal was the identification and description of any significant relationships.

Sampling

Each of the PREPS member districts participated in the study. The district-level information was collected for each district. The building-level data were collected for each school containing a fifth or eighth grade. The teacher data were collected from all fifth and eighth grade teachers in reading, mathematics, or language arts (at the eighth grade level, social studies was substituted for reading). The results of all teachers at a grade level in a school were aggregated into a school average for each subject area. The classroom management information called for some sampling. Each school's roster of fifth grade teachers in reading, mathematics, and language arts was assembled. From these lists, teacher's names were randomly selected for inclusion in the classroom observations. If a school had one to three teachers in a subject area, only one teacher was selected for observation. If the school had four to six teachers in a subject area, two teachers were selected; and if a school had over six teachers in a subject area, three teachers were selected for observation. When more than one teacher was selected in a subject area for a school, the resulting observations were averaged together and used as the best estimate for the corresponding school-wide score.

Instruments

The data-gathering instruments which were used, with the exception of the CAT-70, were developed specifically for this study. These instruments were viewed and critiqued by the PREPS coordinators and some superintendents, then subsequently revised. As mentioned earlier, however, there was insufficient time in which to gather reliability or validity information on these instruments.

District level. At the district level, information concerning programs of the feeder schools to the fifth grades was collected. The form displayed in Appendix A, contained nine items, and was completed by the PREPS coordinator in conjunction with district level administration.

Building level. For the building level, information concerning the programs and characteristics of schools containing a fifth or eighth grade was collected. A copy of the form is displayed in Appendix B. The seventeen items on the form were completed by the building supervisor or administrator.

Instructor. The instructor form was designed to collect information concerning preparation and perceptions of the fifth and eighth grade teachers in selected subject areas (reading or social studies, mathematics, and language arts). A copy of the form is displayed in Appendix C. Classroom teachers responded to this form, which contained sixteen items.

Time management. The instrument used to assess classroom time allocation was the time management scale. The scale was used only at the fifth grade level. The form, displayed in Appendix D, contained seven distinct types of behavior, and was completed by either the PREPS coordinator or persons designated by the coordinator while observing the class.

Test scores. The test scores used were for grades five and eight, and obtained from 1976-77 administrations under the statewide assessment program. Scores on the Short Form Test of Academic Aptitude were used to create anticipated performance (AASS) on the CAT-70. In addition, the actual achievement scores (ADSS) on the CAT-70 were used, as well as the difference between ADSS and AASS. Documentation exists concerning the technical quality of the test (CTB McGraw-Hill, 1974). No direct information giving more recent estimates of test reliability or validity for Mississippi examinees is available.

Statistical Analyses

For each of the forms, the following types of analyses were performed: (a) summarization of variable means and standard deviations; (b) calculation of Pearson product-moment correlations; (c) multiple linear regression analyses, using sets of variables to "explain" variation in achievement test scores; (d) discriminant analyses, designed to determine the degree to which schools could be correctly classified as having mean ADSS scores significantly above, at, or significantly below mean anticipated scores by combinations of the variables; and (e) canonical correlations, which determined the best combination of independent and dependent variables, based on the criterion of highest correlation. The alpha level for all significance tests was set at .01. This means that in order to classify a particular outcome as significant, the likelihood of the result having occurred by chance alone (i.e., at random) was one in one hundred.

Results

Question 1: How are certain district level instructional program variables related to fifth grade students' performance on CAT-70?

Programs and Instruction

Table 1 summarizes the information gathered from the schools on the district level form. From the data in Table 1, several conclusions may be drawn. First, the average amount of reading instruction decreases from grades one to three (both total time and estimated individual time), while the time allotted to mathematics and language arts increases from grades one to three. In the first grade, almost twice as much time is

Table 1

Summary Statistics for District-Level Variables
For 1976-77 Fifth Grade Students in Grades One-Three*

Serive Provided	In Grade 1 (1972-73) Mean	SD	In Grade 2 (1973-74) Mean	SD	In Grade 3 (1974-75) Mean	SD
Weekly minutes of instruction in:						
Reading (total)	464.18	(225.09)	433.20	(200.53)	379.74	(162.42
Reading (individualized)	111.37	(169.06)	105.10	(164.38)	96.24	(129.82
Mathematics	243.56	(94.64)	24[illegible].28	(84.19)	252.52	(62.49
Language Arts	226.73	(109.56)	25[illegible].0[illegible]	(102.35)	255.93	(99.82
Special programs:	%		%		%	
Federally-funded for:						
(a) Slow readers	92		95		97	
(b) Low in mathematics	88		86		90	
Non-federally funded for:						
(a) Slow readers	47		49		52	
(b) Low in mathematics	49		49		49	
Experiences for entering students with low readiness	84					

*n = 97 schools.

devoted to reading as to mathematics or language arts. This ratio decreases for grades two and three.

Nearly all the schools offered some federally funded programs for slow readers or low achievers in mathematics. The percentages generally increase from grades one to three. Not as many schools were offering non-federally funded programs for similar students. On the average, about half as many schools offered such programs. This could be because either the federal program served virtually all students in need, or because of cost factors. Finally, most of the schools (84%) offered some special program for entering students with low reading readiness skills.

The latest printing of State Department of Education Accreditation Standards (SDE, Division of Instruction, 1978) contains the recommended amounts of instructional time for reading, mathematics, and language arts (obtained by combining spelling, English, and writing). Table 2 summarizes the recommended instructional times.

Table 2

State Department of Education Recommended Instructional Time for Reading, Mathematics, and Language Arts*

	Time in Minutes					
	Grade 1		Grade 2		Grade 3	
Subject	Daily	Weekly	Daily	Weekly	Daily	Weekly
Reading	150	(750)	125	(625)	105	(525)
Mathematics	25	(125)	35	(175)	45	(225)
Language arts (spelling, English, and writing)	35	(175)	55	(275)	55	(275)

*Source: Standards for Accreditation of Elementary and Secondary Schools (5th ed.). (Bulletin 171) Jackson, Miss.: State Department of Education, Division of Instruction, 1978, p. 38.

From the data in Table 2, the reader can see that the reported times allotted to reading for the participating schools are always less than the recommended times. The difference is greatest for first grade. As an example, the difference between recommended and reported times for first grade reading is nearly one hour per day (57.2 minutes) on the average. Even for third grade, the average difference is nearly thirty minutes a day (29.0 minutes). Mathematics and language arts, however, are provided in greater abundance than the recommended times. In the

first grade, this amounts to 23.7 additional minutes for mathematics and 10.3 extra minutes for language arts per day. By grade 3, though, this narrows to 5.5 minutes more in mathematics and 3.8 minutes less in language arts per day. Evidence as to validity of the SDE recommendations is not presented in the Accreditation Bulletin. If, however, the recommendations are realistic, many schools may be shortchanging their pupils in terms of reading instruction. To be fair, though, the large standard deviations associated with the reported times presented in Table 1 are indicative of the fact that several schools were in fact providing at least the recommended amount of instruction.

Relationship to ADSS

Multiple regressions were performed on mean ADSS scores using district level variables. The results are presented in Tables 3-6. Each table is based on 97 fifth-grade schools, for which complete data were available. On all regression analyses, variables were no longer added if the change in the variance accounted for (R^2) fell below .02, or if the overall F-ratio for regression (proportion of explained plus residual variance to residual variance) was not significant.

The data in Table 3 describe the relationships of the district level variables to spelling ADSS. Six variables were included: federal programs for slow readers in grades 1, 2, and 3, and nonfederal programs for slow readers in grades 1, 2, and 3. Overall, about 25% of the total variation in spelling ADSS could be explained by this combination of variables. The relationships, though, are interesting. In most cases, presence of a federal program was associated with lower mean scores, while presence of nonfederal programs was associated with higher mean scores.

Data in Table 4 show no significant overall F-ratio for regression. While the relationships of number of minutes of language arts instruction in grades 1-3 to language arts ADSS are all positive, they were not significant.

The results in Table 5 indicate that, for predicting mean reading ADSS, federal programs for slow readers in grade 1, nonfederal programs for slow readers in grades 1 and 2, minutes per week of individualized reading in grade 3 and minutes per week of reading instruction in grade 2 were the best variables of this test. Overall, about 24% of total reading ADSS was accounted for by these variables. The relationships of the nonfederal grade 1 and individualized grade 3 reading were positive, while the relationships for the other variables were negative.

Table 3

Multiple Regression of District Level Variables on Mean Spelling ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Federal program for slow readers, Grade 1	.345	.119	.345	-
Nonfederal programs for slow readers, Grade 2	.403	.162	.312	-
Federal program for slow readers, Grade 2	.433	.187	.106	+
Nonfederal program for slow readers, Grade 1	.455	.207	.251	+
Federal program for slow readers, Grade 3	.472	.223	.105	-
Nonfederal program for slow readers, Grade 3	.501	.251	.252	+

Overall F for regression = 5.038; df = 6/90; Standard error = 23.04; $p < .001$.

Table 4

Multiple Regression of District Level Variables on Mean Language Arts Total ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Minutes/week in LA, Grade 3	.093	.009	.093	+
Minutes/week in LA, Grade 2	.215	.046	-.042	+
Minutes/week in LA, Grade 1	.227	.052	-.072	+

Overall F for regression = 1.685; df = 3/93; Standard error = 37.06; $p < .10$.

Table 5

Multiple Regression of District Level Variables
on Mean Reading Total ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Federal programs for slow readers, Grade 1	.411	.169	.411	-
Nonfederal programs for slow readers, Grade 2	.429	.184	.255	-
Nonfederal programs for slow readers, Grade 1	.452	.204	.198	+
Minutes/week individualized reading, Grade 3	.466	.217	-.084	+
Minutes/week reading instruction, Grade 2	.490	.240	.211	-

Overall F for regression = 5.758; df = 5/91; Standard error = 27.93; $p < .001$.

Table 6 contains the results of the regression analysis on math ADSS scores. Overall, only about 13% of the variance in math scores was explained by any set of the district level variables. The variables included were federal programs for low math achievers in grade 2 and nonfederal programs for low math achievers in grades 2 and 3. Only the relationship of nonfederal grade 3 programs was positive.

A canonical correlation was run to determine the set of district level variables best corresponding to the ADSS scores. The results are presented in Table 7.

The data in Table 7 show the district variables included were nonfederal programs in math for grades 2, 3 and reading, grade 3, as well as minutes per week of language arts instruction, grades 2 and 3. For the ADSS scores, the language arts (LA) subtest was weighted most heavily of the four, while reading was weighted least. The overall canonical correlation was .72, which was significant at our pre-selected alpha level of .01.

Table 6

Multiple Regression of District Level Variables on Mean Mathematics Total ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Federal programs for low math, Grade 2	.242	.058	.242	-
Nonfederal programs for low math, Grade 2	.315	.099	.241	-
Nonfederal programs for low math, Grade 3	.359	.129	.200	+

Overall F for regression = 4.577; df = 3/93; Standard error = 23.90; $p < .005$.

Table 7

Canonical Correlation of District Level Variables With Total Mean CAT-70 ADSS

District level		ADSS	
Variable	Coefficient	Subtest	Coefficient
Nonfederal program for low math, Grade 2	-2.350	LA	-1.960
Nonfederal program for low math, Grade 3	2.208	Spelling	.792
Minutes/week LA, Grade 2	1.244	Math	.219
Nonfederal program for slow readers, Grade 2	-1.222	Reading	.178
Minutes/week LA, Grade 3	-1.154		

Canonical correlation = .720; $x^2_{96} = 130.70$; $p = .009$.

Relationship with Difference Scores

For each subtest, schools were classified as belonging to a group below, at, or above this expected score, based on the statewide assessment data. Then, the district level variables were used to find the best discriminant function for correctly classifying schools to groups based on the variables. The results of the discriminant analyses are presented in Tables 8-11.

Table 8 contains the summary of the discriminant analysis using differences in spelling scores. While the overall relationship was not significant at the .01 level ($p = .018$), this function, which included minutes per week of LA, grade 2, special experiences for low readiness, grade 1, and nonfederal programs for math, grade 3, was able to classify correctly almost 62% of all the schools. The chance level of classification, or that which would occur if assignment were random, would be 33.3%.

Table 8

Discriminant Analysis of District Level Variables with Schools Below, At, or Above Expected Level on Spelling

Variable	Standardized Coefficient	Groups		
		Below (Lowest to -15)	At (-14 to +14)	Above (+15 or more)
		$n_1 = 22$	$n_2 = 65$	$n_3 = 10$
Minutes/week LA, Grade 2	-.419			
Special experiences for low readiness, Grade 1	-.864			
Nonfederal programs for low math, Grade 3	.767			

Canonical correlation = .357; $x^2_6 = 15.24$; $p = .018$. Correctly classified = 61.86%.

The discriminant analysis using differences in LA resulted in 16 variables being included. These were: minutes per week in reading, grades 1 and 2; minutes per week in math, grades 1-3; minutes per week in LA, grades 1-3; amount of grade 2 individualized reading; federal programs for readers, grade 2; nonfederal programs for readers, grade 1; federal programs for math, grades 1 and 2; and nonfederal math programs, grades 1-3. Overall, the relationship was significant, with about 75% of the schools being correctly classified from these variables.

Table 9

Discriminant Analysis of District Level Variables with Schools Below, At, or Above Expected Levels on Language Arts

Variable	Standardized coefficient	Groups: Below (Lowest to -13)	At (-12 to +14)	Above (+13 or more)
		$n_1 = 7$	$n_2 = 50$	$n_3 = 40$
Minutes/week reading				
Grade 2	-.263			
Grade 3	.420			
Minutes/week math				
Grade 1	-.592			
Grade 2	1.151			
Grade 3	-.368			
Minutes/week LA				
Grade 1	.274			
Grade 2	-.139			
Grade 3	-.423			
Individual reading				
Grade 2	.516			
Federal program, slow reading				
Grade 2	.293			
Nonfederal program, slow reading				
Grade 1	.369			
Federal program, low math				
Grade 1	-2.026			
Grade 2	1.040			
Nonfederal program, low math				
Grade 1	1.662			
Grade 2	-4.275			
Grade 3	2.572			

Canonical correlation = .721; $x^2_{32} = 89.46$; $p < .001$; correctly classified = 75.26%.

The discriminant analysis on differences in reading resulted in minutes per week in LA, grades 2 and 3, and federal math programs, grade 2 being included. The overall relationship was significant, with about 48% of the schools being correctly classified from these variables.

Table 10

Discriminant Analysis of District Level Variables with Schools Below, At, or Above Expected Levels on Reading

Variable	Standardized coefficient	Groups: Below (Lowest to -10)	At (-9 to +9)	Above (+10 or above)
		$n_1 = 33$	$n_2 = 56$	$n_3 = 8$
Minutes/week LA				
Grade 2	.320			
Grade 3	-.727			
Federal programs low math				
Grade 2	.876			

Canonical correlation = .375; $x^2_6 = 17.3$; p = .008; correctly classified = 48.4%.

The discriminant analysis using differences in math scores is presented in Table 11. The variables included in the relationship were minutes per week of grade 2 reading, of grade 1 LA, federal reading programs in grades 1 and 2, and nonfederal reading programs in grades 1 and 2. It is interesting to note that no mathematics variables were included in the final set. Overall, the relationship was significant, with about 65% of the schools being correctly classified.

Table 11

Discriminant Analysis of District Level Variables with Schools Below, At, or Above Expected Levels in Mathematics

Variable	Standardized coefficient	Groups: Below (Lowest to -10)	At (-9 to +9)	Above (+10 or more)
		$n_1 = 39$	$n_2 = 50$	$n_3 = 8$
Minutes/week reading				
Grade 2	-.152			
Minutes/week LA				
Grade 1	-.333			
Federal program for slow readers				
Grade 1	1.129			
Grade 2	-1.028			
Nonfederal program for slow readers				
Grade 1	.546			
Grade 2	-.224			

Canonical correlation = .375; $x^2_{12} = 41.20$; $p < .001$; correctly classified = 64.95%.

Question 2: How are certain building-level, instructionally-oriented variables related to fifth- and eighth-grade students' performance on the CAT-70?

Variables Summary

Tables 12 and 13 contain the summary statistics for the building level variables from the fifth and eighth grade schools, respectively. The data in Tables 12 and 13 are based on 97 fifth grade schools and 24 eighth grade schools, respectively.

Table 12

Summary Statistics for Building Level Variables for Fifth Grade Schools*

Subject	Minutes per week Mean	SD	Average class size Mean	SD
Science	227.22	(65.97)	25.01	(5.12)
Mathematics	272.01	(63.13)	25.32	(4.58)
Reading	292.16	(84.03)	24.90	(5.25)
Social Studies	235.98	(61.05)	25.28)	(4.36)
English/LA	283.97	(84.37)	25.21	(4.69)
Music	97.18	(67.25)	22.40	(8.54)
Art	90.47	(68.18)	18.67	(10.69)
P.E.	123.61	(63.37)	26.60	(15.30)
Other	94.28	(105.00)		

Cost per ADA	Mean
Instructional salaries	777.05
Instructional supplies	9.02

Offer extracurricular activities	
Intramural sports	11.3%
Interscholastic sports	8.2%
Band	5.2%
Choir	18.6%
Clubs or organizations	27.8%

Student Characteristics (%)

Retainees	Transfers	Receive free lunch
13.2	18.2	58.4

Special Programs

	Special assistance	Instruction in regular curriculum	Have certified teacher	For above average
Reading	93	98	75	52.6
Math	86	98	--	52.6
LA	--	--	--	50.5

Administrator Perceptions

Variable	Mean	SD
Pupil time on task	4.4	(.57)
Change in classroom behavior	1.56	(.69)

*n = 97 schools.

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Table 13

Summary Statistics for Building Level Variables for Eighth Grade Students*

Subject	Minutes per week Mean	SD	Average class size Mean	SD
Science	272.60	(19.88)	27.0	(2.45)
Mathematics	278.27	(26.02)	27.64	(2.34)
Reading	270.25	(31.99)	17.14	(8.57)
Social Studies	278.27	(26.02)	27.73	(2.57)
English/LA	278.27	(26.02)	27.36	(2.25)
Music	230.00	(104.40)	25.17	(6.21)
Art	171.25	(141.91)	18.25	(5.56)
P.E.	261.00	(59.71)	32.45	(10.49)
Other	275.75	(32.69)		

Cost per ADA	Mean
Instructional salaries	325.90
Instructional supplies	15.31

Offer extracurricular activities	
Intramural sports	100%
Interscholastic sports	100%
Band	100%
Choir	100%
Clubs or organizations	100%

Student Characteristics(%)

Retainees	Transfers	Receive free lunch
13.9	23.54	62.3

Special Programs

	Special assistance	Instruction in regular curriculum	Have certified teacher	For above average
Reading	64%	45%	64%	30%
Math	54%	54%	--	45%
LA	--	--	--	27%

Administrator Perceptions

Variable	Mean	SD
Pupil time on task	4.4	(.52)
Change in classroom behavior	1.27	(.47)

*n = 24 schools.

For minutes per week of instruction, the primary differences were that, in eighth grade, more time on the average was devoted to science, social studies, music, art, and P.E. In fifth grade, more time on the average was devoted to reading than in the eighth grade. Average class size in eighth grade schools tended to be larger than those in fifth grade schools. The average reported costs per ADA in instructional salaries and supplies are suspect. From the raw data, it is clear that some administrators misinterpreted the desired figures or gave inaccurate information. Hence, the reader should not place much stock in the listed values.

One very large difference between the sets of schools was the frequency of extracurricular activities. Virtually all the eighth grade schools reporting offered activities in sports, music, or clubs; at the fifth grade level, the highest figure of 27.8% was noted for clubs or organizations. The percentages of pupils ever retained (13-14%), transfers (18-23%), or pupils receiving free lunch (58-62%) were similar at both grade levels.

Far fewer eighth grade schools offered special programs for low achievers in reading or math (54-64% vs. 86-93%), fewer of the eighth grade instructors gave instruction in reading or math and there were fewer eighth grade schools offering special programs for above average students in reading, math, or LA, than for fifth grade schools (27-45% vs. 50-52%).

Finally, administrators at each grade viewed the relative amounts of time pupils spent on task as being very high and very similar (4.4 on a 5 point scale). Both fifth and eighth grade administrators perceived pupil behavior at their school as generally having improved, although eighth grade school administrators were the most optimistic (1.27 vs. 1.56 on a scale from 1-3, where 1 indicates improvement, 3 means deterioration).

Table 14 presents the State Department of Education recommended amounts of instructional time in different subject areas. In order to make the subject areas comparable, the SDE recommendations for social studies were formed by combining those of history and geography, while those for English/LA were determined by combining the areas of English, spelling, and writing.

The fifth grade schools provided, on the average, a little more than recommended times in science, mathematics, reading, and P.E. (about 10 minutes each more per day), and less in social studies and English/LA (about 13 and 18 minutes per day less, respectively). The other differences were negligible.

Table 14

State Department of Education
Recommended Instructional Time for Certain Academic Areas in
Grades 5 and 8*

Subject	Grade 5		Grade 8	
	Daily	Weekly	Daily	Weekly
Science	35	175	45	225
Mathematics	45	225	45	225
Reading	50	250	45	225
Social Studies[1]	60	300	75	375
English/LA[2]	75	375	85	425
Music	20	100	20	100
Art	20	100	20	100
P.E.	15	75	15	75

[1]Formed by combining History and Geography.

[2]Formed by combining English, Spelling, and Writing.

*Source: Standards for Accreditation of Elementary and Secondary Schools (5th Ed.): Jackson, MS: State Department of Education, Division of Instruction, 1978, p. 38.

The eighth grade schools provided, on the average, more than the recommended times in science, math, reading (about 10 minutes each more per day) as well as music, art, and P.E. (26, 13, and 40 minutes per day more, respectively). However, the amounts of time provided in social studies and English/LA were less than the recommended times by about 20 and 30 minutes per day, respectively.

Relationship to ADSS

Tables 15-18 contain the summary information for the multiple regression analyses performed using the building level variables with ADSS scores. All analyses were based on 97 fifth grade schools. Since the number of eighth grade schools having complete data was so small, similar analyses were not performed.

Table 15 presents the summary information for the regression of building level variables on spelling ADSS. Two variables were included before the arbitrary cut-off criterion of R^2 change of .02 was met. Those were the percent of pupils receiving free lunch and whether regular teachers provided instruction in math. Both variables were negatively related to ADSS. The greater the number of pupils receiving free lunch, the lower was the school's mean ADSS. Similarly, the larger the proportion of regular classroom teachers providing math instruction, the poorer were mean achievement scores. This variable might be reflecting a self-contained vs. departmentalized structure, although neither appeared in any of the analyses. Overall, about 34% of the total score variation in ADSS was accounted for by these two variables.

Table 15

Multiple Regression of Building Level Variables with Spelling ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Free lunch	.574	.329	.574	-
Regular teachers provide math instruction	.587	.345	.061	-

Overall F for regression = 24.77; df = 2/94; $p < .001$; standard error = 21.09.

The information from the regression analysis using building level variables on LA ADSS is presented in Table 16. A total of four variables was included in the final set, which accounted for nearly 45% of the total variance. The variables included were percentage of pupils receiving free lunch (negatively related to ADSS); whether or not clubs were offered (negatively related); average class size in LA (negatively related); and whether programs existed for above average students in LA (positively related).

Table 17 presents the results of the multiple regression analysis using building level variables with reading ADSS. The four variables included were free lunch (negatively related); whether clubs were offered (negatively related); average class size in reading (negatively related); and whether programs for the above average reader were available (positively related). As a set, these four variables were able to account for nearly 52% of the total reading ADSS variance.

Table 16

Multiple Regression of Building Level Variables with LA ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Free lunch	.604	.365	.604	-
Offer clubs	.638	.408	-.245	-
Class size English/ LA	.661	.437	-.144	-
Programs for above average readers	.670	.449	-.020	+

Overall F for regression = 18.76; df = 4/92; $p < .001$; standard error = 28.39.

Table 17

Multiple Regression of Building Level Variables with Reading ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Free lunch	.662	.438	.662	-
Offer clubs	.686	.470	-.224	-
Class size, reading	.703	.494	-.163	-
Programs for above average readers	.718	.516	-.036	+

Overall F for regression = 24.52; df = 4/92; $p < .001$; standard error = 22.17.

The results from the regression analysis of building level variables with math ADSS are presented in Table 18. The three variables selected in the analysis included free lunch; whether clubs were offered; and average class size in math. All three were negatively related to mean ADSS. The larger the average math class size, therefore, the lower was a school's mean math ADSS.

Table 18

Multiple Regression of Building Level Variables with Math ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Free lunch	.559	.313	.559	-
Offer clubs	.588	.346	-.218	-
Size math classes	.612	.375	-.148	-

Overall F for regression = 16.61; df = 3/93; $p < .001$; standard error = 20.24.

Clearly, the proportion of students receiving free lunch was a consistent predictor of mean achievement scores, as it appeared for each subtest area. Average class size was also consistently negatively related to scores with the exception of spelling. Whether a school offered clubs was negatively related to scores. Since, however, relatively few (less than 30%) of the schools reported any clubs or organizations being sponsored, this result may have been more a factor of a few schools in particular rather than a general trend.

Relationship with Difference Scores

Tables 19-22 summarize the results of discriminant analyses performed on the schools grouped as being below, at, or above expected level. All analyses are based on 97 fifth grade schools. The small number of eighth grade schools having complete data prohibited similar analyses.

Table 19 presents the results of the best discriminant function for differences in spelling. The best function included a total of 11 variables and was significant at the .01 level. The three variables which were most heavily weighted were average class size in LA, reading, and math. Overall, this function could classify correctly 68% of the schools.

Table 19

Discriminant Analysis of Building Level Variables with Schools Below, At or Above Expected Scores in Spelling

Variable	Standardized Coefficient	Groups: Below (Lowest to -15)	At (-14 to +14)	Above (+15 or more)
		$n_1 = 22$	$n_2 = 65$	$n_3 = 10$
Minutes/week				
Math	.326			
Reading	-.233			
Social studies	.530			
LA	-.277			
Other	.260			
Class size				
Math	1.576			
Reading	1.670			
LA	-2.824			
% transfers	.544			
% free lunch	-.372			
Perceived time on task	.276			

Canonical correlation = .629 $x^2_{22} = 65.14$; $p < .001$; correctly classified = 68%.

Data from the discriminant function relating building level variables with differences in LA scores were presented in Table 20. The best discriminant function included a total of fourteen variables. The five variables most heavily weighted in the function were number of minutes per week in reading, LA, music, "other", and whether special programs were offered for above average students in math. The function was significant at the .01 level. Overall, the function could correctly classify 68% of the schools as being below, at, or above expected level.

Table 20

Discriminant Analysis of Building Level Variables with Schools Below, At, or Above Expected Scores in LA

Variable	Standardized Coefficient	Groups: Below (Lowest to -13)	At (-12 to +12)	Above (+13 or more)
		$n_1 = 7$	$n_2 = 50$	$n_3 = 40$
Minutes/week				
Reading	.696			
LA	-.462			
Music	-.445			
Other	-.515			
Class size				
Music	-.105			
P.E.	-.309			
Offer band	.161			
Offer clubs	-.059			
% transfers	.410			
% free lunch	.232			
Perceived time on task	-.243			
Certified reading teacher	-.278			
Special programs for above average				
Math	-.538			
LA	.217			

Canonical correlation = .64; $x^2_{28} = 65.44$; $p < .001$; correctly classified = 68%.

Table 21 contains the results of the discriminant analysis using building level variables with groupings based on differences in reading scores. The best function, which included fifteen variables, was significant at the .01 level. The four variables which were weighted

most heavily in the function were average class size in math and LA, minutes per week in science, and whether choir was offered. Overall, the function could correctly classify 74% of the schools.

Table 21

Discriminant Analysis of Building Level Variables with Schools Below, At, or Above Expected Scores in Reading

Variable	Standardized Coefficient	Groups Below (Lowest to -10)	At (-9 to +9)	Above (+10 or more)
		$n_1 = 33$	$n_2 = 56$	$n_3 = 8$
Minutes/week				
Science	-.708			
Social studies	.270			
Class size				
Math	2.017			
LA	-1.558			
Cost, instructional supplies	.379			
Offer band	.313			
Offer choir	-.614			
% retained	.140			
% free lunch	.411			
Perceived time on task	-.335			
Special assistance				
Poor reader	.314			
Poor in math	.335			
Regular teacher				
Math	.052			
Special program for above average				
Math	-.256			
LA	.315			

Canonical correlation = .623; $x^2_{30} = 68.46$; $p < .001$; correctly classified = 74.2%.

The data from the discriminant analysis using building level variables to reproduce groupings of schools based on differences in math scores are presented in Table 22. The best discriminant function included seventeen variables, and was significant at the .01 level. The five most heavily weighted variables included number of minutes per week in science, average class size in social studies and P.E., and whether special programs for above average students in LA and math were available. Overall, the function could correctly classify 69% of the schools.

In general, the only variables which appeared more than once as being more heavily weighted included minutes per week of instruction, average class size, and whether special programs existed for above average students.

Table 22

Discriminant Analysis of Building Level Variables with Schools Below, At, or Above Expected Scores in Math

Variable	Standardized Coefficient	Groups: Below (Lowest to -10)	At (-9 to +9)	Above (+10 or more)
		$n_1 = 39$	$n_2 = 50$	$n_3 = 8$
Minutes/week				
Science	.580			
Reading	.048			
Other	-.395			
Class size				
Science	-.605			
Social studies	1.053			
LA	-.376			
Music	.314			
P.E.	-.640			
Instruction salaries	.204			
Instruction supplies	.392			
No. of grades in school	.321			
Offer interscholastic sport	.040			
Regular teacher				
Reading	.307			
Certified teacher				
Reading	.314			
Special programs for above average				
Math	1.974			
LA	-2.128			
Perceived change in behavior	-.260			

Canonical correlation = .630; $x^2_{34} = 73.39$; $p < .001$; correctly classified = 69.1%.

Question 3: How are certain teacher preparation variables and teacher perceptions of a school's instructional program related to fifth- and eighth-grade students' performance on the CAT-70?

Instructor Variables

Table 23 contains the summary statistics for the instructor variables for fifth and eighth grade schools. Data were available from 73 fifth grade schools and 37 eighth grade schools. Generally, the teachers at each grade level responded in similar manner, with the exceptions of area of certificate, degree, and classroom variables.

About six out of seven of the teachers obtained their undergraduate degree at an in-state, public institution. Most obtained degrees from a four-year college or advanced degree-granting university. Few attended a non-doctoral granting university. Most of the fifth grade teachers had bachelor's degrees in elementary education (82%), while most (75%) of the eighth grade teachers held degrees in secondary areas. For both grade levels, about 70% held an A certificate, about 23% held AA certification, and only 3-6% held either an AAA or AAAA certificate. For fifth grade teachers, current certification was in the elementary area for nearly all (88%), while for eighth grade teachers, about 61% held certification in a secondary area.

The teachers' perceptions did not vary widely from item to item. The lowest ratings (about 3.4 to 3.5 on a five point scale where 5 is the most positive and 1 is most negative) were given to the training teachers received in teaching reading and math and the district's in-service training, while the highest ratings were given to the perceived value of homework/drill, the school's instructional program, and the teachers' undergraduate preparation in their areas.

Finally, about one-half (44% for fifth grade, 57% for eighth grade) of the teachers perceived pupil behavior as having improved over the past five years, rather than being unchanged or deteriorating. About one-half (57% fifth grade, 46% eighth grade) of the teachers operated in self-contained classrooms. More eighth grade teachers were departmentalized (42% vs. 28%), though about the same percentages used team-teaching (9% and 12% for fifth, eighth grade). A large number of the teachers provided pupils with special experiences in music (72% and 66% for fifth and eighth grade), while fewer provided experiences in art (14%, 25%) or P.E. (3%, 8% for fifth, eighth grades).

Table 23

Summary Statistics for Instructor Variables for Fifth and Eighth Grade Schools*

Undergraduate school (%)	5	8	Degree area (%)	5	8
Private	11.67	21.46	Elementary	82.26	25.08
Public	87.56	78.48	Secondary		
Doctoral-granting	43.07	31.73	Math	3.90	11.32
Other university	7.53	15.43	English	2.16	21.73
4-year college	49.04	52.84	Soc. Studies	1.56	12.89
In-state	85.04	86.94	Science	1.00	11.24
Out-of-state	14.10	12.81	Other	7.23	14.84
			Non-ed.	0.49	2.81
Certificiate in Area (%)					
A	72.53	69.57	Elementary	88.05	38.94
AA	24.73	22.97	Secondary		
AAA	2.04	4.49	Math	4.49	17.49
AAA	0.11	2.70	English	2.45	15.78
			Soc. Studies	0.27	9.94
			Science	0.34	6.54
			Other	2.19	11.14

(Continued)

Table 23 (continued)

Teacher Perceptions (on scale from 1-5)

	5		8	
	Mean	SD	Mean	SD
Undergraduate Training in Field	3.81	(.78)	3.97	(.60)
District in-service	3.38	(.79)	3.54	(.65)
Training to teach reading	3.46	(.82)	3.30	(.57)
Training to teach math	3.45	(.87)	3.65	(.68)
School's instructional program	3.90	(.82)	3.89	(.70)
Value of practice/homework	3.87	(.82)	4.05	(.74)
Pupil time on task	3.84	(.89)	3.89	(.61)
Need for additional in-service	3.52	(.88)	3.70	(.66)

Classroom (%)

		5	8
Pupil Behavior:	Improved	44.30	56.86
	Same	21.19	21.70
	Deteriorated	28.89	21.62
Structure:	Self-contained	56.60	45.81
	Team-taught	12.07	9.30
	Departmentalized	28.16	42.19
Provide Experience in:	Music	72.08	66.19
	Art	14.44	24.68
	P.E.	3.45	7.57

Fifth grade n = 73 schools, eighth grade n = 37 schools.

Relationship to ADSS

Tables 24-27 contain the summary information for the multiple regressions using the instructor variables on ADSS scores. All are based on 73 fifth grade schools. There was an insufficient number of eighth grade schools to perform these analyses, so they were omitted.

The data presented in Table 24 summarize the regression using instructor variables on spelling ADSS. Seven variables were included. In general, the greater the number of teachers possessing secondary social studies degrees, teachers perceiving the need for additional training, or teachers certificated in social studies, the lower were the school's scores. On the other hand, the greater the number of teachers graduating from a doctoral-granting university, perceiving homework/practice as valuable, graduating from a private school, or holding a AAA certificate, the higher were the school's scores. Using all variables, about 45% of the total spelling ADSS variance could be explained.

Table 24

Multiple Regression of Instructor Variables with Spelling ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Undergraduate degree in secondary social studies	.422	.178	.422	-
Degree from doctoral-granting university	.512	.262	.317	+
Need for additional training	.574	.330	-.214	-
Value of homework/practice	.615	.378	.155	+
Undergraduate degree from private school	.637	.406	.052	+
Certificate in social studies	.658	.433	-.181	-
AAA certificate	.675	.456	.240	+

Overall F for regression = 7.78; df = 7/65; $p < .001$; standard error = 20.83.

Table 25 contains the summary of the regression analysis using instructor variables on LA ADSS. Six variables were included. Using all six, 35% of the total LA ADSS variance could be explained. In general, schools with more teachers graduating from four-year colleges, with degrees in secondary social studies or English, or team-teaching, had lower mean ADSS scores. Schools with more teachers graduating from private schools or holding a AAA certificate generally had higher mean ADSS scores.

Table 25

Multiple Regression of Instructor Variables with LA ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Degree from 4-year school	.332	.110	.332	-
Degree in secondary social studies	.454	.206	-.322	-
Degree in secondary English	.497	.247	-.226	-
Degree from private school	.546	.298	.048	+
Team-teaching	.572	.327	-.134	-
AAA certificate	.594	.353	.162	+

Overall F for regression = 6.67; df = 6/66; $p < .001$; standard error = 32.86.

Table 26 summarizes the regression analysis performed using instructor variables on reading ADSS. Seven variables were included. In general, schools having more teachers with degrees in secondary social studies, from a four-year college, in secondary English, secondary science, or using team-teaching had lower mean achievement scores. Schools having more teachers with degrees from a private college or with AAA certificates had higher mean reading achievement scores. Overall, about 38% of the variance in ADSS could be explained by this set of variables.

Table 26

Multiple Regression of Instructor Variables with Reading ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Degree in secondary social studies	.372	.138	.372	-
Degree from 4-year college	.482	.232	-.320	-
Degree from private college	.520	.270	.090	+
Degree in secondary English	.558	.311	-.146	-
Team-taught class	.580	.336	-.101	-
Degree in secondary science	.597	.356	-.179	-
AAA certificate	.614	.377	.143	+

Overall F for regression = 6.22; df = 7/65; $p < .001$; standard error = 26.61.

Table 27 summarizes the multiple regression performed on instructor variables with math ADSS. A total of eight variables were included. With the exceptions of the number of teachers graduating from a private college and teachers perceiving their pre-service training as good, the variables were all negatively related to mean ADSS. These included degrees from four-year college, perceived need for additional training, degrees or certificates in secondary social studies, number of teachers with A certification, and degrees in secondary English. A total of 44% of math ADSS variance could be accounted for using these variables.

Generally speaking, these analyses demonstrate that these instructor variables are not outstanding predictors of CAT-70 achievement scores. It is interesting to note that AAA certification, degree from a private or a doctoral granting university, whenever appearing, were positively related to mean ADSS. Degrees from a four year school, degree or certificate in secondary English or social studies, whenever appearing, were negatively related to mean ADSS. These results should be tempered, however, by keeping in mind the very low percentages of teachers in these categories (see Table 23).

Table 27

Multiple Regression of Instructor Variables with Math ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Degree from 4-year college	.352	.124	.352	-
Need for additional training	.494	.244	-.271	-
Degree in secondary social studies	.544	.296	-.252	-
Degree from private college	.569	.324	.076	+
Perceived quality of pre-service	.598	.357	.059	+
Certificate in secondary social studies	.622	.387	-.174	-
A certificate	.641	.411	-.146	-
Degree in secondary English	.665	.442	-.144	-

Overall F for regression = 6.35; df = 8/64; p <.001; standard error = 21.96.

Relationship with Difference Scores

Tables 28-31 contain the results of discriminant analyses performed using the instructor variables to classify schools as being either below, at, or above expected ADSS level. Each of the analyses is based on 73 fifth grade schools. Again, there was too little eighth grade data to perform similar analyses, so they were omitted.

Table 28 contains the summary of the best discriminant function which could be obtained from the instructor variables with spelling ADSS as the classification variable. The resulting discriminant function contained sixteen variables, and was significant at the .01 level. The six variables given the greatest weight were degree in secondary English, A certificate, an elementary certificate, perceived pupil time on task,

perceived quality of district in-service training, and need for additional training. Overall, about 72% of the schools could be correctly classified.

Table 28

Discriminant Analysis of Instructor Variables for Schools Below, At, or Above Expected Spelling Scores

Variable	Standardized coefficient	Groups		
		Below (Lowest to -15)	At (-14 to +14)	Above (+14 or more)
		$n_1 = 16$	$n_2 = 47$	$n_3 = 10$
Degree from advanced university	-.038			
Degree from other university	.293			
Degree in secondary math	.287			
Degree in secondary English	.621			
A certificate	.457			
AAAA certificate	.266			
Elementary certificate	.479			
Secondary science certificate	-.188			
District in-service	-.615			
School's instructional program	.238			
Perceived pupil time on task	-.502			
Need for additional training	.455			
Classroom behavior improved	-.410			
Departmentalized	-.231			
Provide music	.015			
Provide P.E.	-.072			

Canonical correlation = .671; $x^2_{32} = 56.58$; $p = .005$; correctly classified = 72.6%.

The summary data for the discriminant analysis for the instructor variables and groups based on LA scores are presented in Table 29.

Table 29

Discriminant Analysis of Instructor Variables for Schools Below, At, or Above Expected LA Scores

Variable	Standardized coefficient	Groups		
		Below (Lowest to -13)	At (-12 to +12)	Above (+13 or more)
		$n_1 = 9$	$n_2 = 36$	$n_3 = 28$
Degree in elementary	.375			
Degree in secondary math	-.218			
Degree in secondary English	.149			
Degree in secondary social studies	-.267			
Degree in non-education area	-.061			
AAAA certificate	.264			
Certificate in secondary "other"	-.420			
Quality of in-service	.435			
Classroom behavior improved	-.224			
Self-contained class	.235			
Provide music	-.536			
Provide art	-.359			
Provide P.E.	-.551			

Canonical correlation = .706; $x^2_{28} = 69.31$; $p < .001$; correctly classified = 75.3%.

Overall, fourteen variables were included in the best discriminant function, which was significant at the .01 level. The six variables which were given the greatest weight in the function were degree in elementary, certificate in secondary "other" area, perceived quality of district in-service, and whether the classroom teacher provided experiences in music, art, or P.E. The percentage of schools correctly classified by this function was about 75%.

Table 30 contains the results of the discriminant analysis using instructor variables to group schools based on differences in reading scores.

Twenty variables were included in the best discriminant function, which was significant at the .01 level. The four variables which were weighted most heavily in the function were degree in secondary social studies, perceived quality of pre-service training and district in-service training, and whether the teacher provided experiences in art. Overall, 95% of the schools could be correctly classified on the basis of this function.

The summary of the discriminant analysis using groups based on math difference scores is presented in Table 31.

Included in the best discriminant function were sixteen variables. The five variables which were most heavily weighted were undergraduate degree from in-state school, from an out-of-state school, and whether classroom structure was self-contained, departmentalized, or team-taught. The first two variables mentioned were weighted far more heavily than were any other variables. The overall function, which correctly classified 78% of the schools, was significant at the .01 level.

In summary, the instructor variables have been the most powerful for correctly classifying a school's difference score as being below, at, or above expected level.

Table 30

Discriminant Analysis of Instructor Variables for Schools Below, At, or Above Expected Reading Scores

Variable	Standardized coefficient	Groups		
		Below (Lowest to -10)	At (-9 to +()	Above (+10 or more)
		$n_1 = 24$	$n_2 = 44$	$n_3 = 5$
Degree from private college	-.253			
Degree in secondary social studies	.319			
Degree in secondary science	.229			
Degree in non-education area	.257			
A certificate	.065			
AAAA certificate	-.267			
Elementary certificate	-.154			
Secondary math certificate	.113			
Secondary social studies certificate	-.332			
Pre-service training	-.473			
In-service training	.322			
Training to teach reading	-.253			
Value of homework/ practice	-.170			
Need for additional training	.242			
Classroom behavior unchanged	.118			
Team-taught	-.219			
Departmentalized	.183			
Provide art	-.545			
Provide P.E.	.174			

Canonical correlation = .78; $x^2_{40} = 78.86$; $p < .001$; correctly classified = 85%.

Table 31

Discriminant Analysis of Instructor Variables for Schools Below, At, or Above Expected Math Scores

Variable	Standardized coefficient	Groups		
		Below (Lowest to -10)	At (-9 to +9)	Above (+10 or more)
		$n_1 = 32$	$n_2 = 32$	$n_3 = 9$
Degree from private school	.022			
In-state degree	5.153			
Out-of-state degree	5.493			
Degree in non-education area	.035			
A certificate	.415			
AAAA certificate	.004			
Pre-service training	-.006			
Preparation to teach math	.006			
Pupil time on task	-.417			
Need for additional training	.661			
Classroom behavior same	-.205			
Classroom behavior worse	-.036			
Self-contained class	1.610			
Team-taught	.834			
Departmentalized	1.680			

Canonical correlation = .69; $x^2_{32} = 72.31$; $p < .001$; correctly classified = 78%.

Question 4: How is the teacher's allocation of classroom time related to students' performance on the CAT-70?

Summary Statistics

The classroom time management scale was administered as earlier described. Usable information was available and summarized for 92 fifth grade schools. Table 32 contains the summary statistics for the classroom time management variable in LA, reading, and math.

Included in Table 32 are both the relative percentages of time devoted to each activity, and the approximate times in minutes, based on a hypothetical fifty-minute class period. One surprising aspect of these data is the remarkable similarity between the three subject areas for time allotments. The largest observed difference is between on-task delivery of instruction between LA and reading, a difference of less than 7 percentage points, which is analogous to less than three and one-half minutes in a fifty-minute period. Two possible explanations for this outcome are: (a) teachers have been trained or have come to allot these proportions of time as the ideal class schedule; or (b) since the same people often observed teachers in all areas, some hidden bias in recording behavior might have occurred.

In general, the "average" class period observed had about 30-35% of the time devoted to teacher delivery of instruction, with the teacher being "on task" about 90-97% of the time. Approximately 50-55% of the class time was devoted to directed student work (e.g., homework or exercises), with students being "on task" (arbitrarily defined as over one-half the class at any given moment) about 92-94% of the time. Finally, about 12-15% of a typical class period was taken by noninstructional teacher behaviors, of which time approximately 14-20% was used for correcting misbehavior (an average of 2-3 minutes per period), 17-20% taken by outside interruptions, and 60-67% (an average of 8-10 minutes per fifty-minute period) devoted to mechanical operations, such as passing out papers, taking attendance, and so on.

Relationship to ADSS

Multiple regression analyses were performed using the appropriate time management variables with spelling, LA, reading or math achievement scores. For spelling and LA, the times from a school's LA classes were used. For reading and math scores, the school's times in reading or math, respectively, were used. These data are presented in Tables 33-36.

Table 32

Summary Statistics for Classroom Time Management Variables for LA, Reading, and Math*

Variable	Subject Area					
	LA		Reading		Math	
	Percentage	Minutes[1]	Percentage	Minutes	Percentage	Minutes
Delivery of instruction						
On task	34.10	17.05	27.39	13.70	28.82	14.41
Off task	1.10	0.55	2.67	1.34	1.61	0.80
Directed student work						
On task	48.28	24.14	50.02	25.01	53.42	26.71
Off task	4.26	2.13	4.53	2.26	3.74	1.87
Noninstructional teacher behaviors						
Correcting misbehavior	1.70	0.85	3.41	1.70	1.82	0.91
Interruptions	2.44	1.22	2.63	1.32	2.13	1.06
Mechanical operations	8.10	4.05	9.36	4.68	8.37	4.18
Total[2]	99.98	49.99	100.01	50.01	99.91	49.94

*n = 92 fifth grade schools.

[1]Based on hypothetical fifty minute class.

[2]Totals may not sum exactly to 100% or 50 minutes due to rounding.

Table 33 presents the summary of the multiple regression with spelling ADSS. Only two variables were included before the arbitrary cut-off point of change in R^2 of less than .02 was met. The variables were directed student work, on task, and time spent correcting misbehavior; both coming from LA classes. The relationship of both variables was positive--that is, the more time students worked on task, or the more time a teacher spent correcting misbehavior (so, possibly, students would tend to stay on task), the higher were mean achievement scores. This result should be tempered, however, by the fact that less than 5% of the overall ADSS variance could be explained by these variables.

Table 33

Multiple Regression of Classroom
Time Management Variables with Spelling ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Directed student work on task, LA	.154	.023	.154	+
Correcting misbehavior, LA	.210	.044	.143	+

Overall F for regression = 2.06; df = 2/89; $p < .10$; standard error = 24.94.

Table 34 contains the summary of the regression analysis using LA ADSS. The same two variables were included in the analysis on spelling scores. Time on correcting student misbehavior and student time on task in directed work were both positively related to ADSS. Again, however, the relatively low percentage (7%) of variance accounted for in the dependent variable of achievement scores should be kept in mind.

The summary data for the regression analysis on reading times with reading ADSS are presented in Table 35.

This particular analysis yielded the least exciting results of all. Only the variable of teacher time off task in delivery of instruction was related to reading ADSS, and in a negative fashion. This means that the greater the amount of teacher time off task, the lower were a school's mean achievement scores. The percentage of variance accounted for by this variable, however, was very low (3%).

Table 34

Multiple Regression of Classroom
Time Management Variables with LA ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Correcting misbehavior, LA	.190	.036	.190	+
Directed student work on task, LA	.267	.071	.186	+

Overall F for regression = 3.41; df = 2/89; $p < .05$; standard error = 36.15.

Table 35

Multiple Regression of Classroom
Time Management Variables with Reading ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Delivery of instruction, teacher time off task	.179	.032	.179	-

Overall F for regression = 2.99; df = 1/90; $p < .10$; standard error = 30.09.

Summary information for the multiple regression on math ADSS is presented in Table 36. The predictive power of the time management variables was somewhat better for math scores. Four variables were included: amount of teacher time off task (negatively related); amount of teacher time on task (positively related); amount of student time off task (positively related); and time spent correcting misbehavior (negatively related). One possible explanation for the apparently contradictory relationship of student time off task to ADSS is that possibly math students who finish their work more quickly (and, therefore, have more time off task) are those students who perform better on the achievement test. In all, this set of variables could account for less than 10% of the total score variance (9.4%).

Table 36

Multiple Regression of Classroom
Time Management Variables with Math ADSS

Variable	Multiple R	R^2	Simple r	Relationship
Delivery of instruction, teacher time off task	.164	.027	.164	-
Delivery of instruction, teacher time on task	.222	.049	.133	+
Directed student work time off task	.272	.074	.110	+
Correcting misbehavior	.307	.094	-.140	-

Overall F for regression = 2.27; df = 4/87; $p < .10$; standard error = 24.51.

In general, the predictive power of the time management variables was not as strong as that of the district level, building level, or instructor variables.

A canonical correlation was performed, but the best function was not significant and is therefore not presented.

Relationship with Difference Scores

Discriminant analyses were performed to determine how well the time management variables were able to reproduce school classifications as being either below, at, or above expected performance. For the four areas of spelling, LA, reading, and math, the best discriminant functions were not significant, and are, therefore, not presented. The percentages of correct classification ranged from a high of 55% in LA to 35% in reading (math was 37%, spelling 52%). The reader should recall that, if classification were made on a random basis, with no data, we would expect an average correct classification of 33.3%. Thus, inclusion of the time management variables provided little additional discriminatory power over the chance level.

Conclusions and Recommendations

The scope of the 1977-78 PREPS overall project was grand in scale, short in time frame, and somewhat lackluster in terms of astounding results. Nevertheless, some points of interest were raised in the analysis of the data, and should be reiterated here. The following conclusions appear to be warranted from the data.

District Level Variables

1. The reported amounts of weekly instruction in reading in grades 1-3 for this year's fifth grade were well below the current State Department of Education recommendations. This difference ranged from nearly one hour per day in the first grade to thirty minutes in the third grade.

2. While nearly all schools offered federally funded programs for low achievers in reading and math in grades 1-3, only about half provided non-federally funded programs. In general, schools providing nonfederal programs tended to have higher mean ADSS scores.

3. This set of variables did not provide good predictive power for ADSS scores; the amounts ranged from 5% to 25% of total ADSS variance explained.

4. The district level variables were able to correctly categorize schools as below, at, or above expected scores from 48% of the time (reading) to 75% of the time (language arts). Number of minutes per week of language arts instruction entered for all areas.

Building Level Variables

1. Eighth grade schools offered uniformly larger mean numbers of minutes per week of instruction in all subjects than fifth grade schools except reading. The average class size for eighth grade schools was uniformly larger than that for fifth grade schools, with the exception of reading classes. At both levels, the percentage of retainees (13%), transfers (18-23%), and pupils receiving free lunch (58-62%) were similar. Virtually all the junior high schools reporting offered extracurricular activities, while relatively few fifth grade schools did. Fewer eighth grade schools offered special programs for above average or below average students in reading, math, or language arts than did fifth grade schools. Finally, school administrators perceived pupil time on task similarly at both grade levels, as they did changes in classroom behavior.

2. At both grade levels, schools were offering courses which were very close in length to the current SDE recommendations, although for eighth grade schools, the reported instructional times in social studies and in language arts were below the recommended times by 20 and 30 minutes

per day, respectively.

3. The variables of free lunch and offering of clubs or organizations appeared in most of the regressions (free lunch appeared in all) of building variables on mean ADSS, both being negatively related to ADSS. The variance in ADSS accounted for by these variables ranged from 34% (spelling) to 51% (reading).

4. The variables could be combined to correctly classify schools as being below, at, or above expected scores at the rate of 68% (spelling and language arts) to 74% (reading) of the time. Variables which were weighted most heavily included minutes of instruction per week in an area, average class size, and whether special programs existed for above average students.

5. Money spent on instructional supplies in the fifth grade was more strongly related to achievement scores (relationship was positive) than was money spent on instructional salaries.

Instructor Variables

1. About six out of seven teachers at both grade levels graduated from public, in-state schools at the bachelor's level. Nearly all graduated from a doctoral-granting university or a four-year college. Over 88% of the fifth grade teachers held elementary certificates, while about 60% of the eighth grade teachers held a secondary certificate. About 90% of the teachers at both grade levels held an A or AA certificate. Teachers at both grade levels perceived their pre- and in-service training, their schools' program, and pupil classroom behavior similarly. Classroom structure is self-contained more often in the fifth grade, and almost equally departmentalized or self-contained in eighth grade.

2. For fifth grade schools, the instructor variables could account for total ADSS variance from 35% (language arts) to 45% (spelling). Of the few variables consistently appearing, degree in a secondary area, degree from a four-year school, or perceived need for in-service training were negatively related to ADSS. On the other hand, the proportion of teachers with AAA certificates, or the number graduating from a private school were both positively related to ADSS.

3. The set of instructor variables could be combined to do the best job in correctly classifying schools as being below, at, or above expected scores, to the time of 72% (spelling) to 85% (reading).

Time Management Variables

1. There was a notable similarity in the recorded times for all subject areas--less than 23% of all class time was recorded as being spent on noninstructional behavior. Using a hypothetical fifty-minute period, teachers tended to directly deliver instruction about 15-18 minutes, assign directed student work for about 26-28 minutes, and be involved in noninstructional activities about 6-8 minutes in each period.

2. Time management variables were not very powerful predictors of achievement; only from 3-9% of total ADSS variance could be explained, nor could they be combined to correctly differentiate between schools based on differences between AASS and ADSS. The rates varied from 35-55%, where 33% is the chance or random level.

Recommendations

Should further research be conducted which involves any of these aspects of school-related variables, the following recommendations are made.

1. All instruments should be field-tested prior to being used. In addition, reliability and validity information should be gathered where appropriate.

2. Should some variation on time management be included, multiple observations should be included. That is, rather than visiting a classroom one time, any class should be observed at least three times.

3. The sample sizes should be considerably larger. This means either: (a) involving more schools; or (b) using the classroom or the individual student as the experimental unit rather than the school. The low number of eighth grade schools for which complete data were available prevented many analyses from being performed.

4. As a suggestion, the relative emphasis of such a project should include as one important feature, a longer-term, in-depth examination of school-related variables within a small subset of the overall sample. That is, a case study approach may prove beneficial.

5. The variables from the instructor form may prove to be, as a set, the most potent of all variables involved in this study. Future studies should certainly include at least some of the variables from this set.

6. One possibility for the time management scale would be a comparison of results obtained to those which would be obtained using the more complex Flanders interaction scale.

7. Finally, if similar studies are to be conducted, one feature or emphasis of these studies should be a thorough review of the relevant literature. This would serve to both lay some empirical foundations against which the results may be compared, and to highlight what variables have shown promise as predictors of school achievement.

APPENDIX A

District Level Form

TO PREPS COORDINATOR

1. Identify the feeder school(s) for each school having a fifth grade in your district. If there are no feeder schools, then use only grades 1-3 at each school.

2. Give a copy of the following form to the appropriate administrator at each feeder school.

3. Collect all the forms when they have been completed. If a particular school is served by more than one feeder school, combine the results into a weighted average, so that the results are proportional to the number of students each feeder school supplies.

Feeder School(s) _____

Fifth Grade School/account number _____

City and District _____

	Grade 1 (1972-73)	Grade 2 (1973-74)	Grade 3 (1974-75)
1. Number of minutes per week of instruction in reading	_____	_____	_____
2. Number of minutes per week of instruction in math	_____	_____	_____
3. Number of minutes per week of instruction in language arts	_____	_____	_____
4. Number of minutes per week of individual instruction in reading (not including special programs)	_____	_____	_____
5. Were federally-funded programs in existence for slow readers?	Yes_____ No _____	Yes_____ No _____	Yes_____ No _____
6. Were nonfederally-funded special programs in existence for slow readers?	Yes_____ No _____	Yes_____ No _____	Yes_____ No _____
7. Were special experiences provided for students in low reading readiness?	Yes_____ No _____		

	Grade 1 (1972-73)	Grade 2 (1973-74)	Grade 3 (1974-75)
8. Were federally-funded programs in existence for low achievers in math?	Yes_____ No _____	Yes_____ No _____	Yes_____ No _____
9. Were nonfederally-funded special programs in existence for low achievers in math?	Yes_____ No _____	Yes_____ No _____	Yes_____ No _____

APPENDIX B

Building Level Form

SCHOOL ADMINISTRATOR

SCHOOL ACCOUNT NO. _____

GRADE LEVEL (5 OR 8) _____

1. What is the average number of minutes per week the typical ___th grade student is scheduled to receive instruction by a certified teacher in each of the following areas?

Subject Scheduled	No. of Minutes/Week
Science	_____
Math	_____
Reading	_____
Social Studies	_____
English/Language Arts	_____
Music	_____
Art	_____
Physical Education	_____
Other (Ind. Arts, Home Ec., Career Ed., etc.)	_____
Break time	_____

2. What is the average class size (not ADA) in the ___th grade for each of the following areas? (Use the same number for the first five subjects if classrooms are self-contained.)

Subject Scheduled	Average Class size
Science	_____
Math	_____
Reading	_____
Social Studies	_____
English/Language Arts	_____
Music	_____
Art	_____
Physical Education	_____

3. What is the total cost per ADA, less any federal funds, for all instructional salaries and supplies for the ___th grade?

_____Instructional Salaries _____Instructional supplies

4. Circle those grades which are contained in your school.

1 2 3 4 5 6
7 8 9 10 11 12

5. Which of the following areas does your school presently offer extra-curricular activities for the ___th grade?

_____ Organized intramural sports
_____ Interscholastic sports
_____ Band
_____ Choir
_____ Clubs/Organizations

6. What is the primary type of classroom structure in your school for the ___th grade?

_____ Self-contained
_____ Team-taught
_____ Departmentalized

7. What percentage of students in the ___th grade at your school have ever been retained at least one year?

8. What percentage of students in the ___th grade at your school have ever attended school in at least one other district?

9. What percentage of students in the ___th grade at your school receive free lunches?

10. For what portion of classroom time in the typical ___th grade class at your school are the students attending to instruction or engaged in instructional behavior? Circle the most accurate response.

Virtually none of the time	Some of the time	About half the time	Most of the time	Virtually all of the time
1	2	3	4	5

11. Is special assistance provided for poor readers in the ___th grade at your school?

_____ Yes
_____ No

12. Do teachers of regular curriculum areas normally provide training in reading skills in the ___th grade at your school?

_____ Yes
_____ No

13. Is special assistance provided for students poor in math skills in the ___th grade at your school?

_____ Yes
_____ No

14. Do teachers of regular curriculum areas normally provide training in math skills in the ___th grade at your school?

_____ Yes
_____ No

15. Is a certified reading teacher assigned to work with students in the ___th grade at your school?

_____ Yes
_____ No

16. Are there special programs at your school for above-average students in the ___th grade in the areas of:

Reading	Math	Language Arts
_____ Yes	_____ Yes	_____ Yes
_____ No	_____ No	_____ No

17. During the past five years, the classroom behavior of students in this school has:

_____ Improved
_____ Remained the same
_____ Deteriorated

APPENDIX C

Instructor Form

INSTRUCTOR

ACCOUNT NUMBER _____

SCHOOL _____

CITY AND DISTRICT _____

SUBJECT AREA(S) _____

GRADE _____

A. Training and experience (check the appropriate response for each item).

1. At what type of institution did you receive your undergraduate degree?

_____ Private
_____ Public

2. What kind of degree-granting status did this institution have?

_____ Advanced (doctoral) degree-granting university
_____ Other university
_____ Four-year college

3. Was this institution located in Mississippi?

_____ Yes
_____ No

4. In what area did you earn your undergraduate degree?

_____ Elementary
_____ Secondary math
_____ Secondary English
_____ Secondary social studies
_____ Secondary science
_____ Other
_____ Non-education area

5. What type of certificate do you currently hold in your <u>teaching</u> area?

_____ A
_____ AA
_____ AAA
_____ AAAA

_____ Elementary
SECONDARY
_____ Mathematics
_____ English
_____ Social studies
_____ Science
_____ Other

B. Perceptions (for each item circle the response which best describes your own feelings).

6. I feel that my undergraduate preparation in my teaching field(s) was:

Inadequate		Adequate		Excellent
1	2	3	4	5

7. I feel that the in-service training I have reached through my school or school district has been:

Inadequate		Adequate		Excellent
1	2	3	4	5

8. I feel that the quality of my preparation in teaching reading skills was:

Not applicable	Inadequate		Adequate		Excellent
0	1	2	3	4	5

9. I feel that the quality of my preparation in teaching math skills was:

Not applicable	Inadequate		Adequate		Excellent
0	1	2	3	4	5

10. I feel that my school provides an instructional program for the pupils which is:

Inadequate		Adequate		Excellent
1	2	3	4	5

11. As an aid to learning, I believe that homework or other type of exercise (i.e., "drill work"), is:

Useless		Important		Very important
1	2	3	4	5

12. For what portion of classroom time in the typical ___th grade class at your school are the students attending to instruction or engaged in instructional behavior?

Virtually none of the time	Some of the time	About half the time	Most of the time	Virtually all of the time
1	2	3	4	5

13. For myself, I feel that additional quality training experiences in my teaching field(s) would be:

Not beneficial		Beneficial		Very beneficial
1	2	3	4	5

C. Classroom (check the appropriate responses).

14. During the past five years, the classroom behavior of students in this school has:

_____ Improved
_____ Remained the same
_____ Deteriorated

15. My classroom structure is:

_____ Self-contained
_____ Team-teaching
_____ Departmentalized

16. In addition to my major course areas, I provide my pupils with experiences in:

_____ Music
_____ Art
_____ Physical education

APPENDIX D

Classroom Time Management Form

TIME MANAGEMENT SCALE

DIRECTIONS: Complete this cover page prior to observing the class. Note the definitions below of the activities which are to be rated.

DATE _____

OBSERVER _____

GRADE _____ SUBJECT _____

SCHOOL/ACCOUNT NUMBER _____

CITY AND DISTRICT _____

TYPE:

_____ Self-contained

_____ Team taught

_____ Departmentalized

_____ Time observation began

_____ Time observation ended

_____ Length of observation

DEFINITIONS:

Delivery of instruction -- time teacher is engaged in direct instructional behaviors

On task -- the majority of the students are attending to the instruction
Off task -- the majority of the students are not attending to the instruction

Directed student work -- teacher-supervised tasks for students to complete

On task -- the majority of the students are working as assigned
Off task -- the majority of the students are not working as assigned

Noninstructional teacher behaviors

Correcting student misbehavior -- the time spent reprimanding student(s), getting students back on task, or to attend to instruction
Interruptions -- intercom announcements, other school personnel visiting, etc.
"Mechanical" operations -- taking attendance, passing out papers, moving students or materials around, etc.

TIME MANAGEMENT SCALE

DIRECTIONS: From your observation of the class, mark out each minute on the time lines to reflect the type of activity in the classroom. Begin marking on the time lines when the class period begins and stop marking when the period ends. In general, give time credit to the teacher's primary activity.

ACTIVITY	TIME
DELIVERY OF INSTRUCTION	
On task	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
Off task	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
DIRECTED STUDENT WORK	
On task	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
Off task	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
NONINSTRUCTIONAL TEACHER BEHAVIORS	
Correcting student misbehaviors	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
Interruptions	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
"Mechanical" operations	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

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SECTION III:

KEYNOTE ADDRESS: DR. L. BASHAW

PREPS ANNUAL RESEARCH SHARING CONFERENCE

FOR 1978

Some Concern About Local Accountability

W. L. Bashaw

University of Georgia

I chose "local accountability" as a general topic for this presentation because of my strong feelings about several accountability issues. I need to share with you my concept of "accountability" and my concerns about how to deal with organizing for accountability.

My orientation (at least, my experience) is primarily "add-on" type programs. That is, my public school evaluation experience largely has involved Federal (or State) special projects that supplement the regular school program. An issue of concern to me in regard to add-on projects is how the sponsoring agency should allocate evaluation dollars. The standard options are (1) to fund local evaluation activities, (2) to fund Federal-level evaluation teams; (3) to fund some intermediate level evaluation teams; or (4) to fund something called "Third Party evaluators". To summarize my position -- (1) too <u>little</u> funding goes into local evaluation, and (2) too much money goes into fat (usually very fat) Federal level evaluation contracts. Federal evaluations consume money in long-range travel, overhead, and profit; they usually result in little left-at-home expertise, and almost always are inadequate for assisting local decision-makers and teachers. Finally, in my summary, is that the "Third Party concept" is <u>possibly</u> a good idea, but seldom appears to be funded consistently with the theory upon which it is based. That is, funding often leads to conflicts of interest that could and should be avoided.

However, before I fill in this summary for you, I need to share with you my concepts of evaluation. I define "accountability" a little differently than do others. Primarily, I do not stop with the notion that you are accountable if you are willing to tell the world about your mistakes. I believe that an accountable person is one who tries to do something about those mistakes and problems. My formal definition follows:

> <u>Accountability</u> is <u>a process through which a program is evaluated by communities and agencies to which it is responsible and through which this evaluation leads to appropriate change</u>.

Accountability can act in two ways -- a positive, dynamic method of controlling change for those personnel who are seriously interested in developing successful programs, and as a negative reinforcer (threat) to personnel who are slow to make needed change. Some educators will want accountability because they recognize it as helpful to them and their students. Possibly there are other educators who must be held accountable, because only by knowing that they will be held accountable will they be

interested in success. This potential was the subject of most of the early Lessinger writing on accountability.

The original concept of "accountability" was developed by Lessinger largely out of criticism of the administration of federally funded programs. The focus was on the relationship of a contractor (the school or some school-related institution) to a funding agency. The point-of-view has been largely that a funding agency should hold a grantee responsible for fulfilling a contract by withholding funds as the threatened outcome if contracts are not fulfilled. If such contracts are written in terms of student changes (performance contracts) then payment might be based on the extent to which children achieve promised results.

My point-of-view of accountability is much broader. Any school system has administrators, boards, children, parents, and other publics to which it is responsible. The school system should hold itself accountable for all programs to all relevant publics. All relevant parties should be kept well informed as to objectives, results, problems, and discrepancies between plans and reality in regard to procedures and results. In this way, the joint resources of all interested parties can be marshalled to assist the program.

Reinforcement theory can be used to develop an accountability theory. It plays a role largely because, I believe, the majority of school personnel have accepted their duties partly, if not entirely, out of an altruistic motivation to do well. If this claim is true, then it follows that school personnel who are following ineffective procedures will want to change their procedures. Moreover, personnel who believe that they are being effective will want to have their effectiveness verified.

Reinforcement theory enters into accountability theory in several ways. The first is that personnel who are doing well need to be reinforced so that they will continue to use their effective techniques. The altruistic motivation of the large majority of school personnel leads to this assumption: information, per se, is an effective positive reinforcer. A person who is doing a good job is highly reinforced when confronted with evidence that he is, in fact, doing a good job. Moreover, evidence that techniques are less than effective is strong motivation to search for a more effective methodology.

A second major role of reinforcement theory relates to public pressure for change. One reacts to the pressure of negative reinforcement by trying to remove it -- that is, the reward is the relief from the undesirable reinforcement. There are occasions when parents (or other groups) exert pressure on school boards and the school administration. This parental pressure is negative reinforcement. The school administration acts to relieve itself of the pressure. The parent group is reinforced positively by having its way. Thus, a cycle is established in which a vocal parent minority can manipulate school decisions. The board finds itself responding to crises rather than to well-developed plans.

Non-vocal parent minority groups, on the other hand, might also have requests. These requests, no matter what the merit, are made with little pressure and can be ignored by the school administrators who might be busy solving crises involving more vocal pressure groups. Failure to achieve change is negatively reinforcing to these quieter groups. Thus, this failure leads to decreased parent participation in needed change.

The school system needs to control the reinforcement schedule through planned accountability programs. It is controlled by holding itself accountable for stated objectives that are supported by its various publics. Information on success will reinforce the use of successful techniques. Information on unsuccessful techniques should lead to program changes.

Edmond Gordon has illustrated the damaging effect of unplanned accountability. He explains the tremendous differences between "middle-class schools" and "poor schools" as partly explainable by a type of informal accountability -- " . . . it is not their (the parents) greater participation or the greater resources of these (middle class) schools but the knowledge on the part of the school people that they are accountable for what happens to children in their schools."

Most schools do have some informal, unplanned accountability principles acting on them. There are two prominent examples of the evolution of over-emphases of programs that can be hypothesized to illustrate the power of accountability to lead to change, even if the change is not in the best interests of a full school program. These two examples are college preparatory curricula and school athletics.

One can imagine the evolution of a college preparatory curriculum as a series of experiences in which irate, middle class parents demand curriculum changes because their child was rejected by the college of choice or flunked out of it after being admitted. Admissions rejections and college grade reports are strong information, the basis of which parents might exert pressure on the school for change. It is irrelevant that large numbers of students are not college bound. (The parents of non-college bound students keep quiet while irate parents of college bound students create pressure on the school.) The school might react to the pressure by "curriculum reform", that is, by creating strong college preparatory programs and ignoring other curriculum areas where there is little political pressure but great need for program improvement.

Another example is athletics. The issue of school athletics contains the questions of why students are required to "study football" after school and why coaches are given pay supplements not available to other teachers.

It is interesting to speculate about schools with minimal standards for graduation. Can we expect to require extra work from those students who do not achieve minimal standards? Can we expect supplemental funds for staffing to bring such students up to the standards? We do this in football and, sometimes, in band. We do it now, somewhat, in Headstart and Follow-Through, and by supplementing any remedial program. Present pressures on schools to maintain minimal competency levels certainly are moving us in this direction in regard to basic skills.

Who Should be Funded for Accountability?

This section concerns how to get organized for accountability. Evaluation information must be used for positive program modification if we are to be accountable. Therefore, it follows that the various decision-makers in a program are the persons who must have timely data. Most of these decision-makers are local personnel -- specifically, classroom teachers, project staff, local advisory boards, and the local administration. (By "local", I usually mean the school building level; however, "local" can often more meaningfully mean a school system, especially if the system is small.)

Personnel at higher levels -- county, state, and Federal -- also need data for decisions at their respective levels. The problem with "higher level" evaluation is that it often provides the granting agency with a capability for making their own decisions, but does not provide adequate procedures for local evaluation. Specifically, these "higher level" requirements can drain away funds so that no support is available to the local decision-makers for local needs.

My major experience in this regard is the Follow-Through program. I am a great believer in the Follow-Through concept of a total system approach to change and I am a believer in the National-level concept of planned variation. That is, Follow-Through is a massive field experiment; therefore, national level data are needed.

However, massive funding went to Stanford Research Institute and Associates for top-level evaluation. Some funding went to the various sponsors to evaluate their programs and to make changes as they saw fit. Little funding for evaluation went into local accountability. Data often were gathered by Federal teams or sponsor teams (and by special Federal project teams). These data seldom resulted in timely reports useful to local personnel. A good review of the value of this massive evaluation expenditure appears in W. W. Cooley and Paul Lohnes, Evaluation Research in Education (New York, John Wiley, 1976, pp. 325-338). Cooley and Lohnes found what we can call research values in the data; namely, evidence that what we do in classrooms can make a difference. Thus, there may well be long-range value in this expenditure.

However, I believe that evaluation funded locally, tailored primarily to local objectives but also to higher-system objectives, and geared to local decision-making can serve local, state, and Federal needs. Local administrators need data quickly. Federal administrators should wait, rather than teachers. An accountability system should be possible that provides all data needs, but such a system is not likely to be established unless it is controlled locally.

I accept the solution that expertise in evaluation not found at the local levels must be provided by contracted outsiders. This is the role of PREPS and a role I have enjoyed on many occasions. But, it is best if these "outsiders" are seen as part of the local team and are controlled financially by the local administration in much the same way PREPS is operated. One of the mandates such "local outsiders" should be given is that they leave behind them evaluation expertise in the form of local staff training.

Who Should Be Accountable?

Historically, the persons held accountable have usually been the students, the principals or superintendents, and the coaches. Today, the focus is on the teacher. This is unfortunate, for the teachers I have known have little control over student quality, funding level, or funds expenditure. They do have control over their own training and teaching methods. But, they fail to have control over too many variables to deserve to be the focus of accountability.

One should not be held accountable except for the decisions one can make. Thus, teachers must be given adequate data for classroom decisions and be able to have reasonable assistance requests filled.

Consider all of the other persons who should join into a comprehensive accountability system; parents, especially; students; administrators; support staff, voters; community resources; state and county resources; and others of which I am unaware. Let's consider accountability plans that comprehensively identify agencies and persons and their specific accountability concerns.

The Third Party Concept

I am engaged in two contracts as a "Third Party Evaluator". The first and second parties are the Federal government and the school system, not necessarily in that order. The concept is that my team is an unbiased observer who can provide data and advice on program continuation. In fact, in both contracts, funds come to me from the local systems and my personal continuation is based upon project continuation. That is, if I recommend that a project be terminated, I am terminating my own contract. With this type of conflict of interest, the third party concept cannot succeed.

From my previous comments, you know that the present procedure is to my liking. That is, what I want is a title change! Why not call me a "local evaluation contractor"? Then I can perform local accountability service with a clear conscience, which is the way that I think things should be done.

However, if there is a need for objective "higher-level" outsiders, then let's organize to do it properly. We must remove all conflicts of interest. We do not want an evaluation the funding of which depends upon the evaluator's recommendations.

For Mississippi's state-level concerns, I can see a direct contract to an agency like PREPS to do third-party work in a set of several communities. Their contract would not depend upon their recommendations concerning program termination. They would be completely independent of the local systems. At the national-level, an accountability team would need the same autonomy.

Thus, the move in the direction of autonomous third party teams appears to be a move in the direction of greater bureaucratic costs. I would like to believe that a reasonably inexpensive autonomous control can be used complementary to an adequately-supported local evaluation effort.

Comments on Mississippi's Accountability Plans

1. You are obviously not ready for the mandated accountability, but this is the kind of thing for which you possibly cannot be prepared. You must just get in there and get started, modifying and improving your local plans as you gain experience.

2. The concern for predictable gains is good. That is, the ability of your students (inputs) must be considered. However, the gathering of ability data and achievement data simultaneously creates ambiguity in the term "ability". Moreover, the ambiguity of predicting is confounded when one worries about which regression line to use. (See William Angoff's comments on this on pp. 522-524 in R. L. Thorndike's Educational Measurement, Washington: American Council on Education, 1971.)

3. The issue of who should be accountable must be faced. Parents, teachers, local administrators, and county-state administrators all must share credit and blame. In fact, we can imagine a careful concern for a student's accountability for the student's own study habits.

4. Setting local standards will be difficult. You do not want standards either too low or too high. This might well be your toughest problem.

5. The CAT is a good choice because of its scale of measurement. State-level decisions are dependent upon having comparable data across systems having similar projects and goals. Traditional grade equivalents do not provide the needed comparability across forms and levels.

Suggestions

1. You need to consider developing locally determined sub-scores on the CAT. That is, eliminate items you consider irrelevant locally when you are doing local evaluations. You must, however, accompany this with the construction of local norms for these special tests.

2. From some discussion here, it appears that you need research on the comparability of forms and levels for both bright and low ability students. PREPS might consider studying test comparability as a PREPS project.

3. You need to be sure to be comprehensive in your data planning for local accountability. Do not put too much stock in the CAT. Be creative and thorough in constructing a data base. (And remember, all students do not need to be assessed on all variables -- sampling techniques do work.)

4. Consider "goal-free" evaluation -- that is, what is it that our system is already doing? Doesn't this imply objectives, even if they are not stated?

PREPS Conference

Let me conclude with some comments on the conference. I am highly pleased with what I have heard here. You are all tackling tough problem areas and your approaches are sound within the practical limitations of on-going school programs. I would like to stress the features that I like and reinforce them. These include the emphasis of many of you on parents and parenting, your concern for primary and pre-primary age groups, the careful separation of data into meaningful subgroups, reasonable comparisons to various data sets, and the focus on graphical and pictorial displays. But most of all, I am impressed with the PREPS concept and the state - local - University working relationships that I have observed here.